The Oil and Gas Journal's

ANNUAL INDEX

of principal articles appearing during 1937, with cross-index of authors

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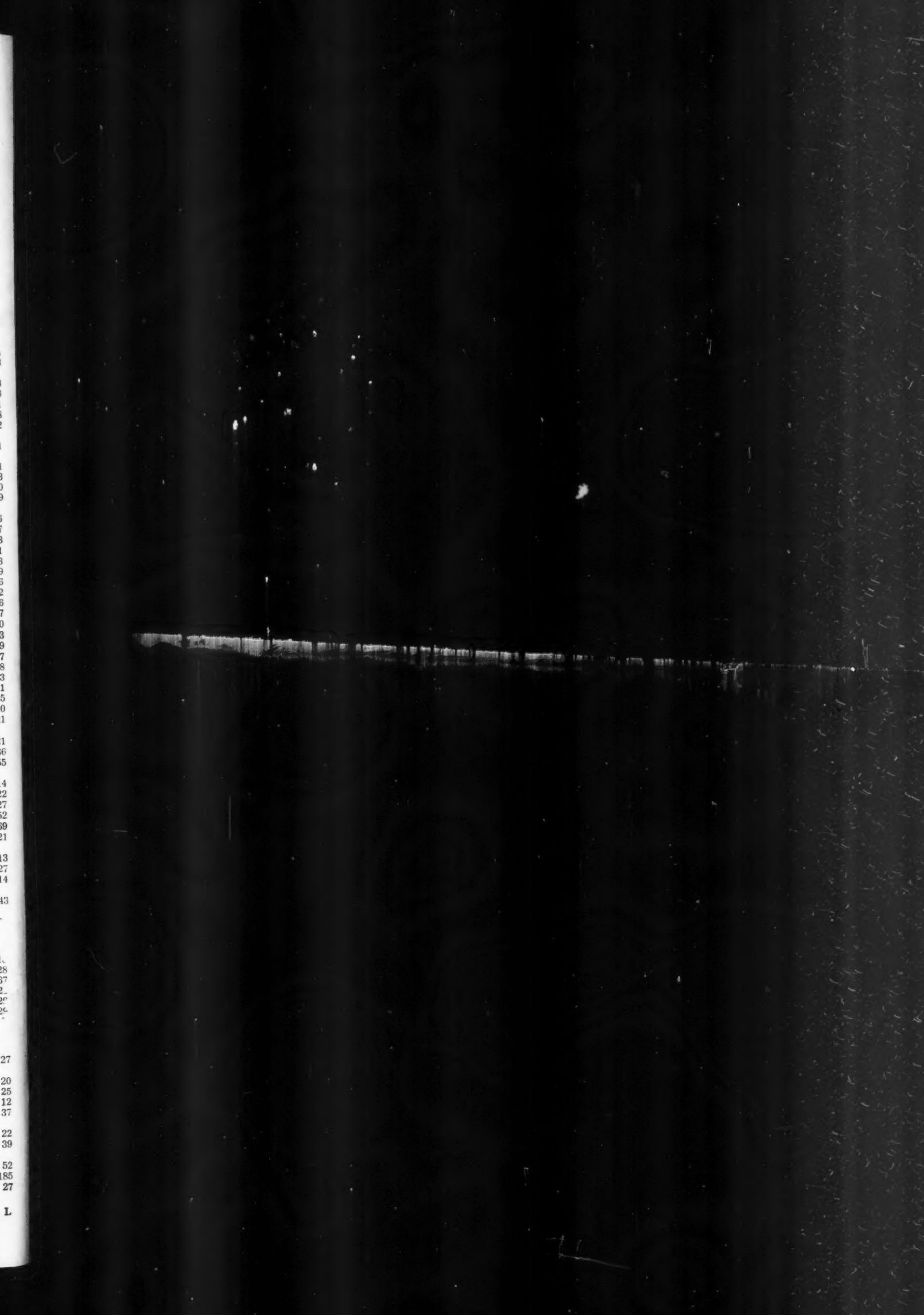

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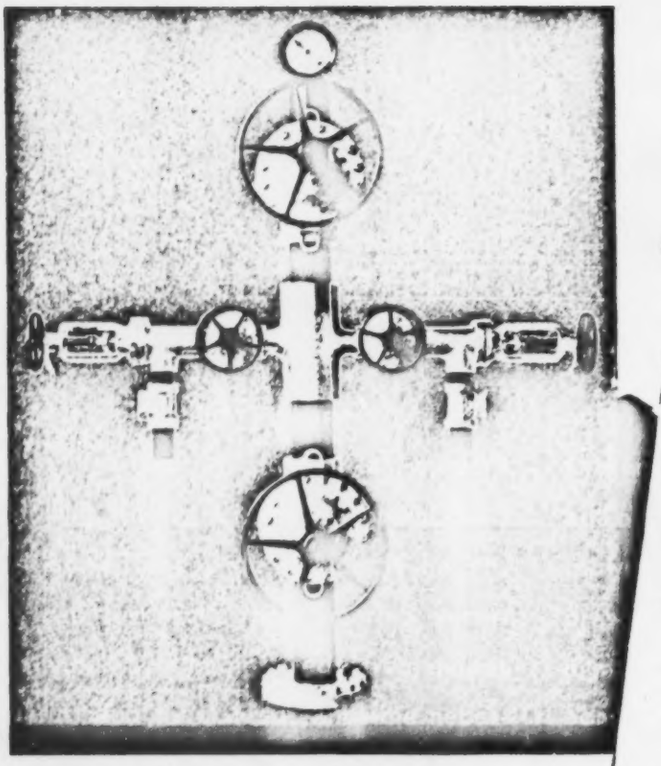

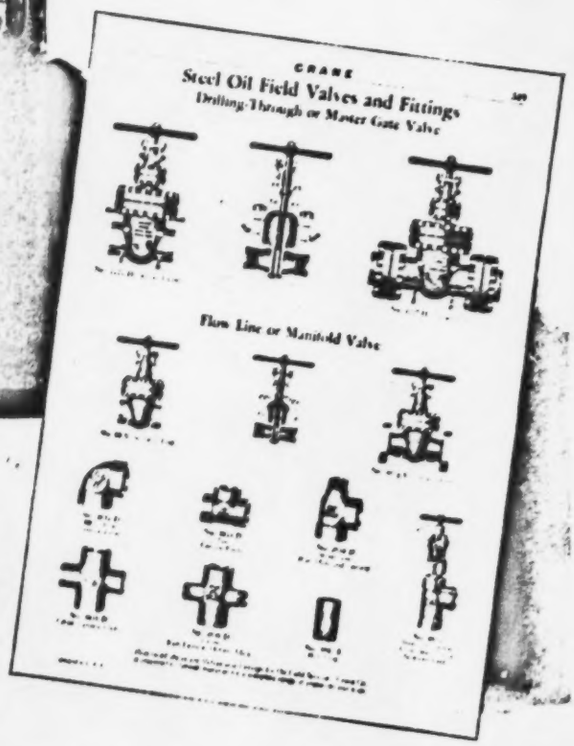

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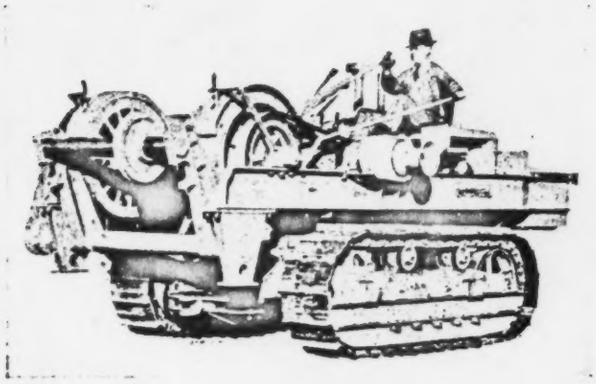

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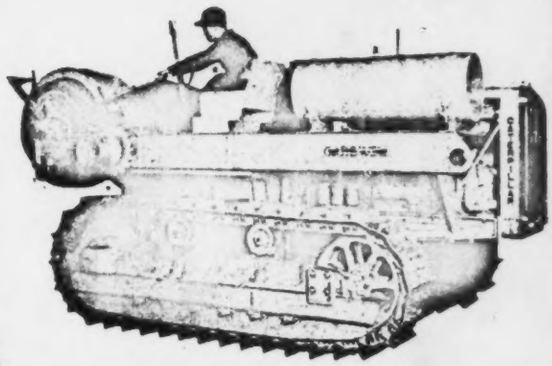

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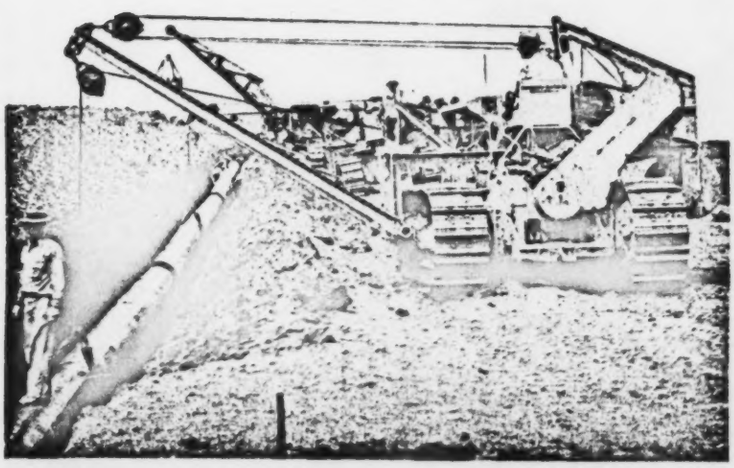

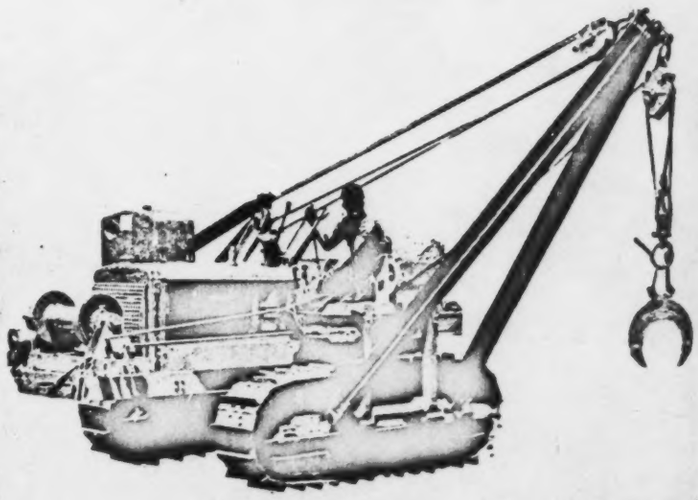

Front end winch optional.
Le treuil avant est facultatif.
Cabria para frente de tractor si se desea.

Pipe line booms available in 4 sizes with "CATERPILLAR" TRACTOR.

Mâts de levage de "Pipe Line" montés sur les 4 grandeurs de Tracteurs à chenilles.

Cabrias para tubería montadas en tractores "CATERPILLAR" de cuatro tamaños.

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Wichita, Kansas, U. S. A.
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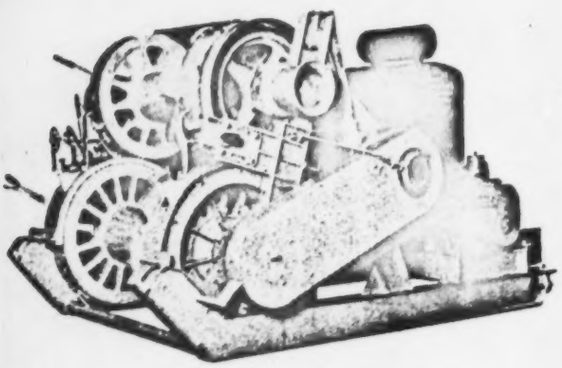
DOUBLE DRUM SERVICING HOISTS

Treuils à double tambour pour entretien des puits.
Grúas para acondicionamiento de pozos, con tambor.



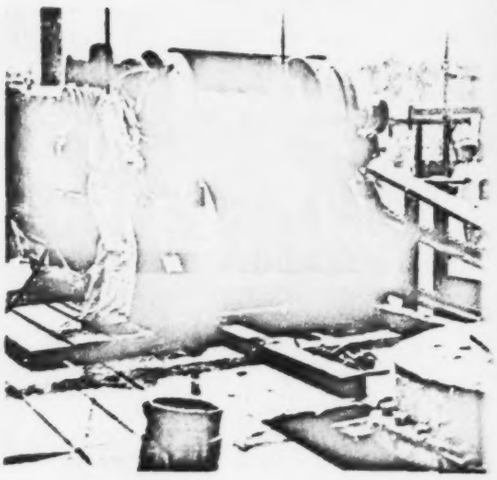
Built in 3 Sizes
Se fait en 3 grandeurs.
Se fabrica en 3 tamaños

Double Drum Draw Works
Treuil à double tambour.
Grúas con tambor doble

Upper Drum Optional
Tambour supérieur facultatif.
Tambor elevado si se desea

PORTABLE DRAW WORKS

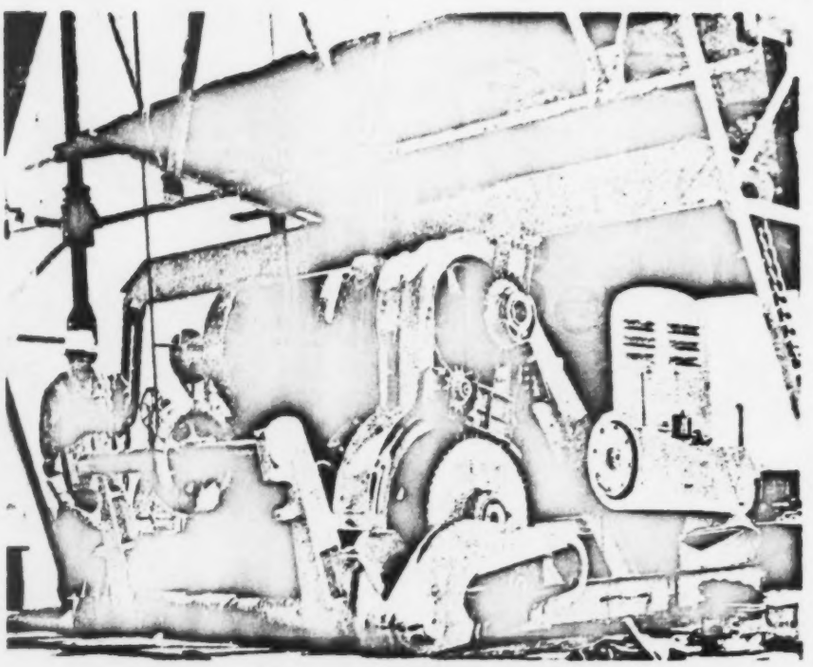
Treuils et supports portatifs.
Grúas Portátiles.



All Double drum units available without rotary table drive or cable tool drilling attachments.

Tous les appareils à deux tambours peuvent être fournis sans table pour "Rotary" ou sans connexion pour forage au câble.

Todos los equipos se venden sin accesorios para mesa giratoria o para herramientas de patrón "Rig Standard".



Quickly Converte Cable Tool to Rota ing and Vice Vers

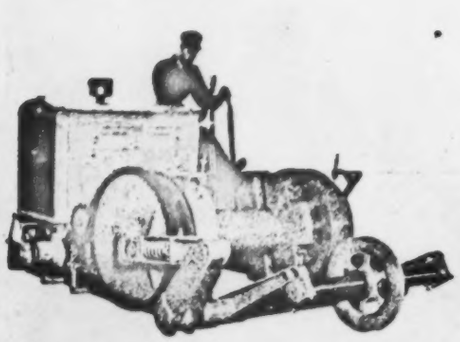
Conversion rapide tême à câble en "R inversement.

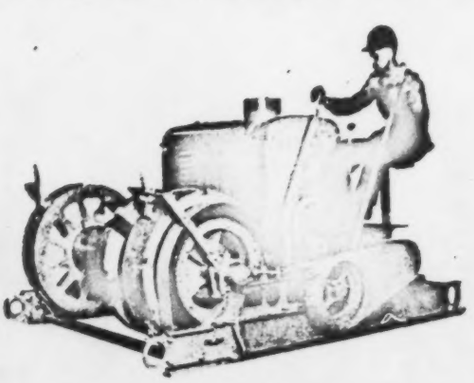
Puede convertirse dida de tiempo del patrón "Standard "Rotatorio", y vice

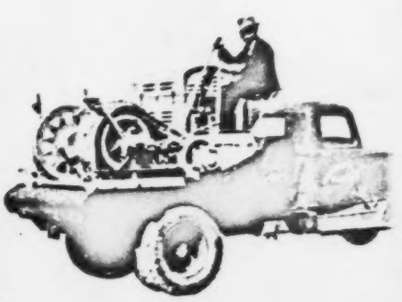
Built in four sizes
Se fait en 4 grandeurs.
Se fabrica en cuatro tamaños

Cable tool drilling attachment
Connexions pour forage au câble
Accessorios para herramientas de patrón "Standard Rig"

For wells of any depth
Pour puits de tout fondeurs.
Para pozos de quiera profundi







Service With Rotary or Cable Tools With These Highly Practical Light Weight Units.
Entretien pour type "Rotary" ou "Câble" avec ces appareils légers et très pratiques.
Estos equipos portátiles son prácticos y durables, ya se usen con maquinaria de sistema "Rotatorio" o patrón "Standard Rig".

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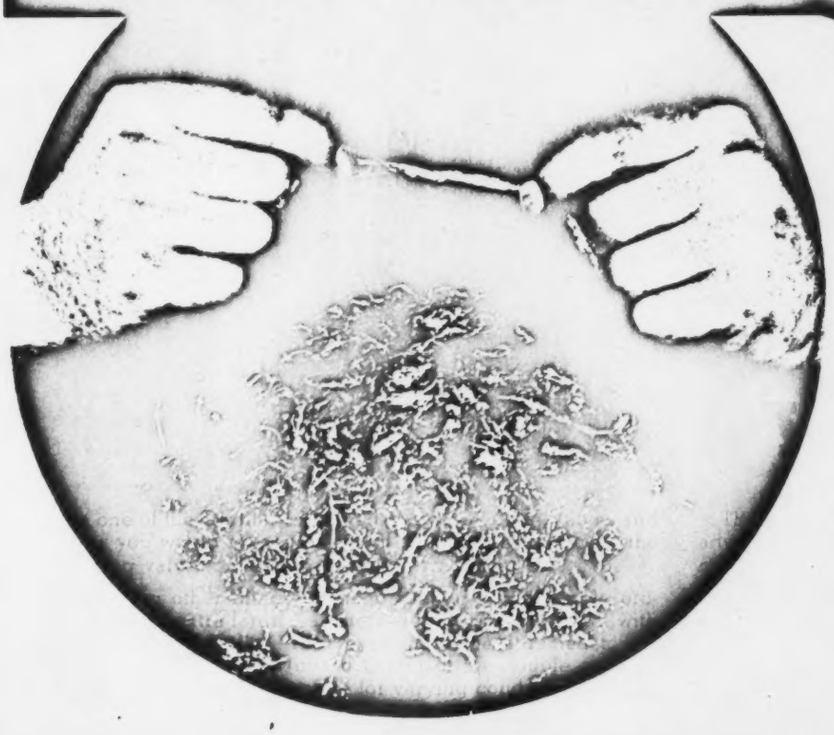
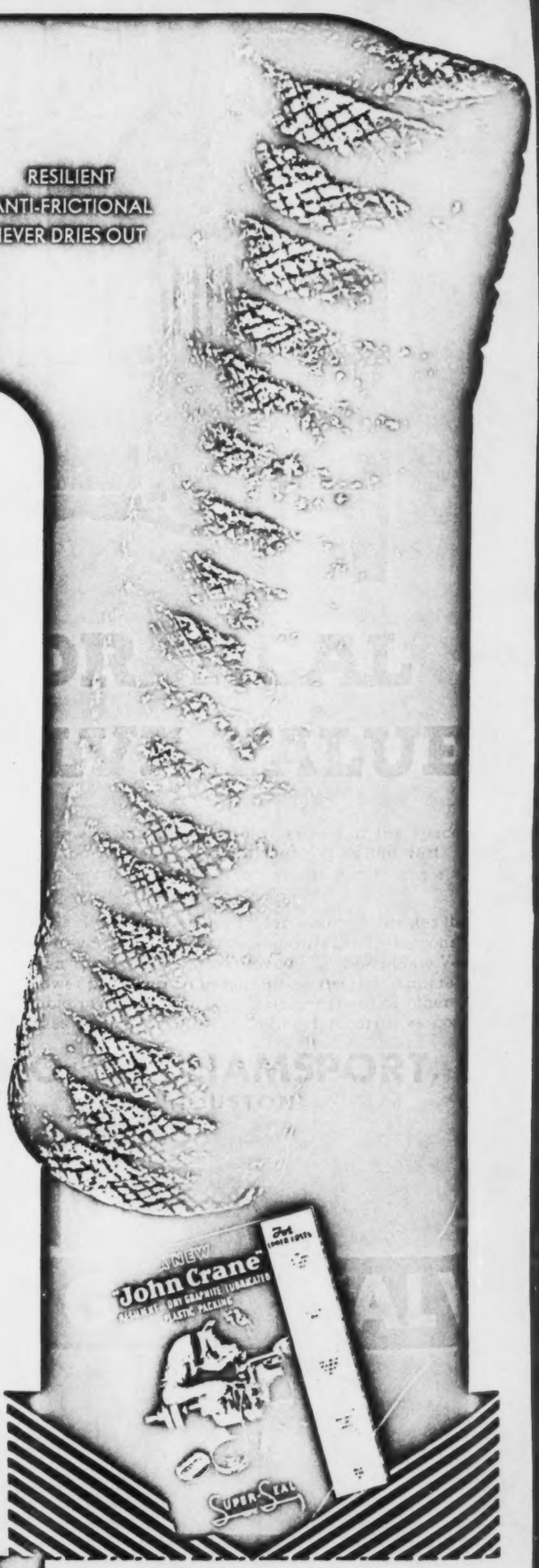
ANTI-FRICTIONAL
NEVER DRIES OUT





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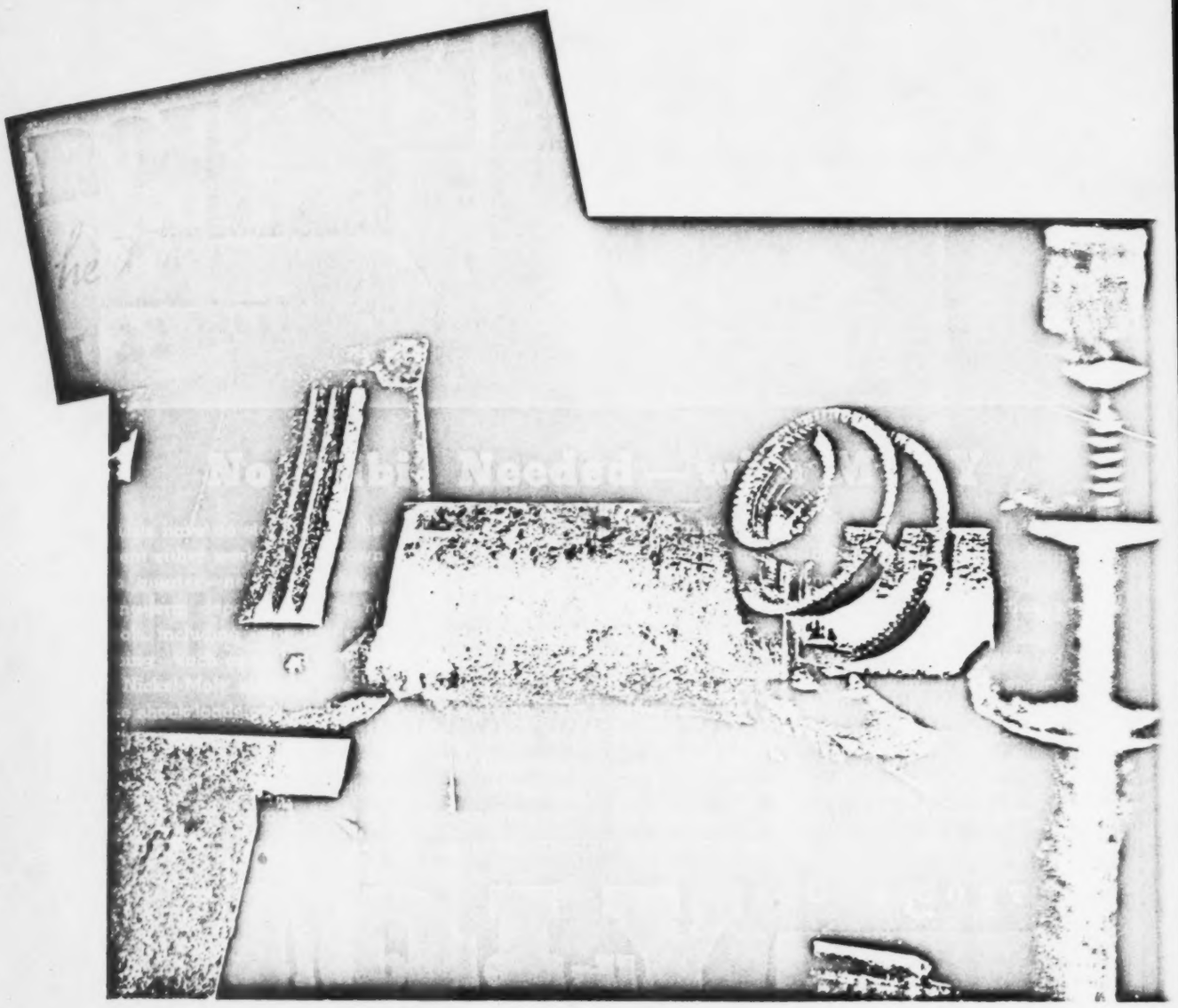

With a tool costing

STOODITE "54" and Stoodite "63", the latest developments in machine tool metals, make it possible for you to make your own lathe, shaper and boring mill tools at extremely low cost. • A few drops of either Stoodite "54" or Stoodite "63" on the tip of an S.A.E. 1045 steel shank and a little grinding complete the operation. • Tools tipped with Stoodite "54" are excellent for machining cast iron and plain steels. • Tools tipped with Stoodite "63" may be used for cutting hard tough materials, such as chilled cast iron and heat treated alloy steels. • Write for details.

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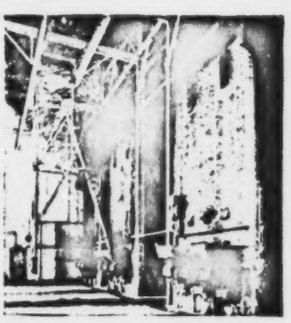
Drop Forged Steel Valves and Fittings are forged from carbon steel billets or stainless steel if desired. They are unexcelled for high pressures, high temperatures, and resistance to corrosion and erosion.

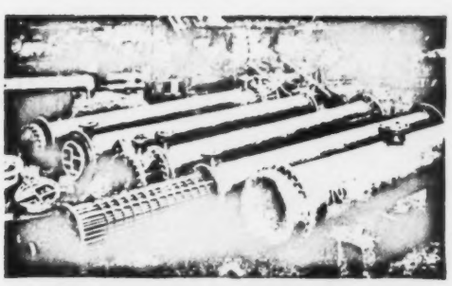
THE worlds leading oil refineries specify Vogt products because of their distinctive features of design and construction for maximum efficiency and economy of operation.

In addition to the products shown here, we manufacture Continuous Rotary Filters, Break Down Filter Presses, Oil Chilling Machines, Ammonia Condensers, Brine Coolers, etc., as well as special equipment which we build to order upon receipt of information.

Descriptive literature covering all Vogt products may be had upon request.

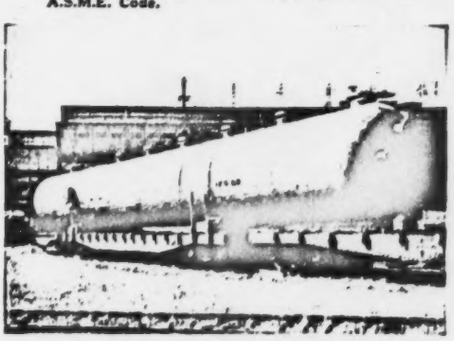


Water Tube Boilers, in bent tube, sectional header or box header types, for any fuel.



Heat Exchangers for high pressure or vacuum service, with fixed or removable tube bundles and baffles, are of cast or welded all steel construction as desired. Special consideration is given to the selection of materials for handling corrosive fluids.

Fusion welded pressure vessels for every pressure and temperature complying with the A.S.M.E. Code.



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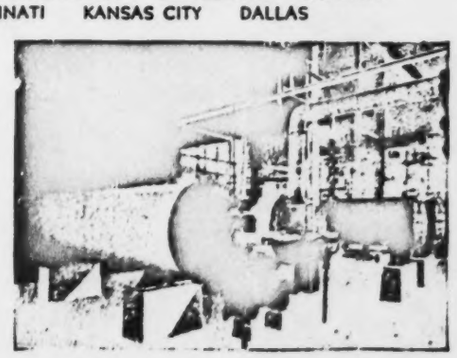

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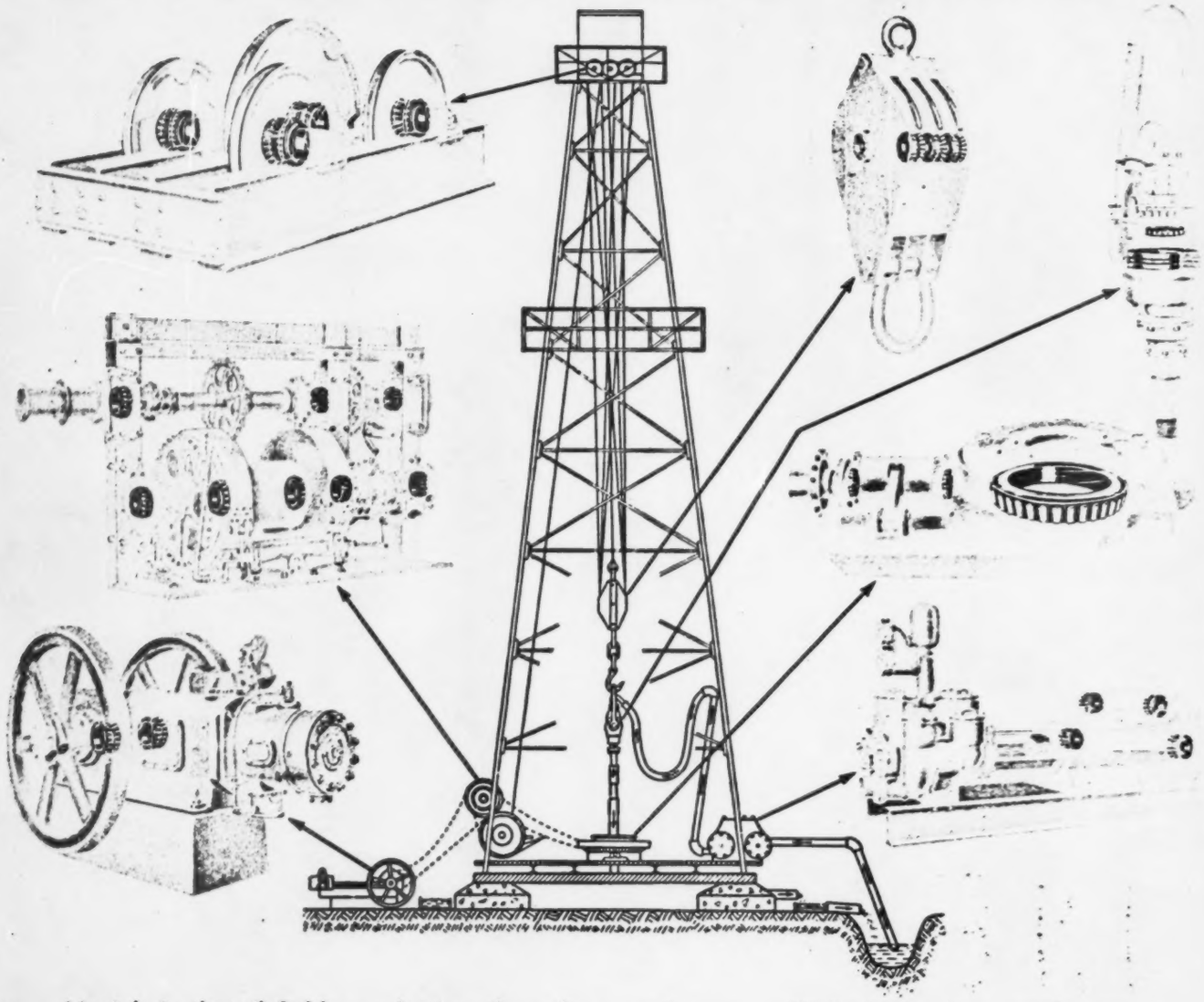
Drilling Down To Two Miles Dee
With TIMKEN BEARING EQUIPMEN



No job in the oil fields emphasizes the value of Timken Bearings as strongly as modern rotary drilling. The variety of equipment used and the conditions under which it has to operate call for exceptional bearing versatility and endurance. High speeds, tremendous radial, thrust and shock loads, and the necessity of holding moving parts in correct and constant alignment combine to put a premium on efficient bearing performance. Timken Bearings have demonstrated again and again their ability to meet every requirement in crown blocks, traveling blocks, swivels, rotaries, draw works, mud pumps and engines with maximum economy and unswerving dependability. Some of the deepest wells ever drilled stand to the credit of Timken Bearing equipment. Operators know it pays to use it.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OH

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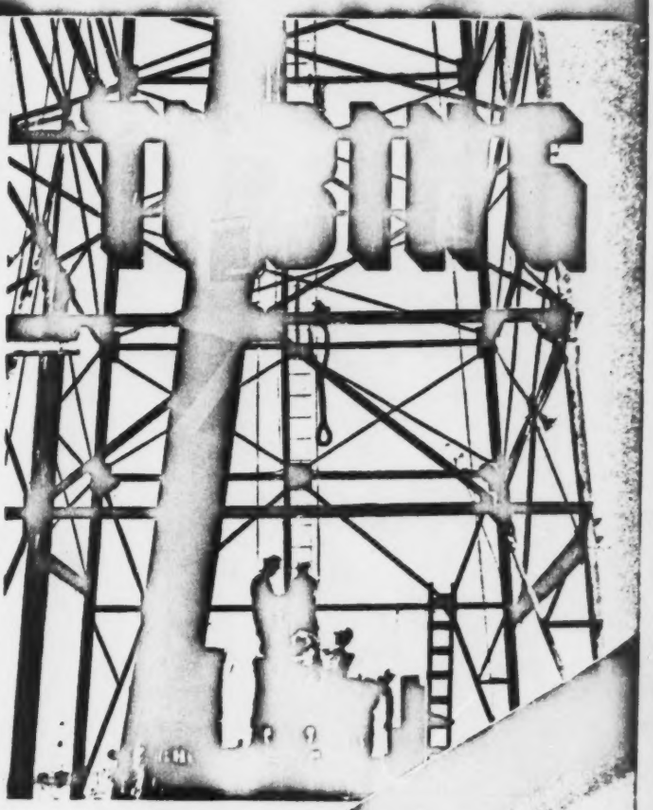

In these four dependable products, you'll find the same high quality for which all Republic Steel products have established a wide reputation. You'll find high yield point with high ductility steel...uniform wall thickness...uniform diameter ...perfect roundness...absolute straightness...ease of bending...ease of welding...freedom from scale inside and out ...double lengths without mid-weld. • You'll be time and money ahead by using Republic Steel as the source of supply for all your piping requirements...casing, tubing, drive pipe and line pipe, as well as butt weld, lap weld and electric weld pipe of steel, copper-bearing steel and rust-resisting Toncan Copper Molybdenum Iron. Write for further information.

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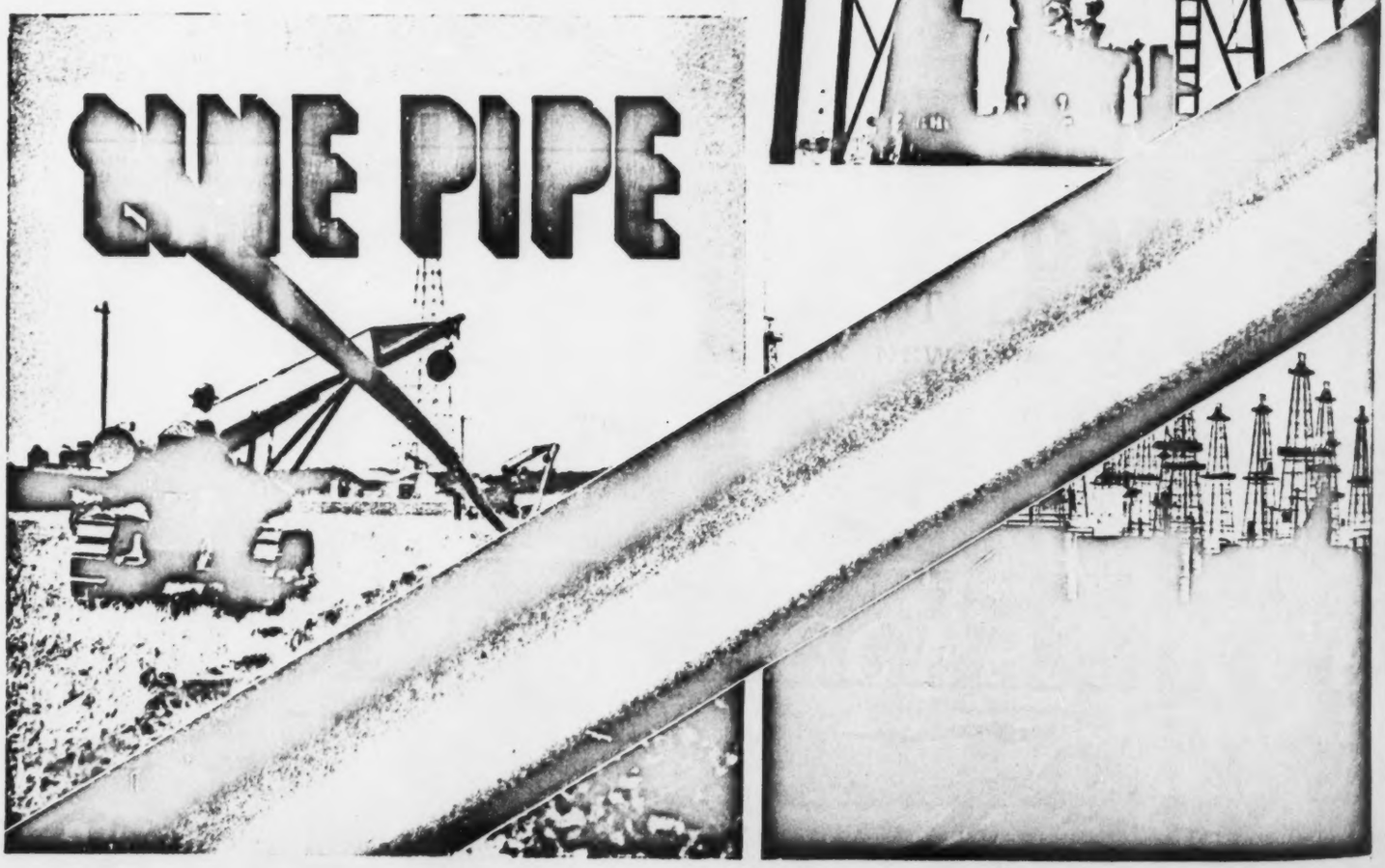

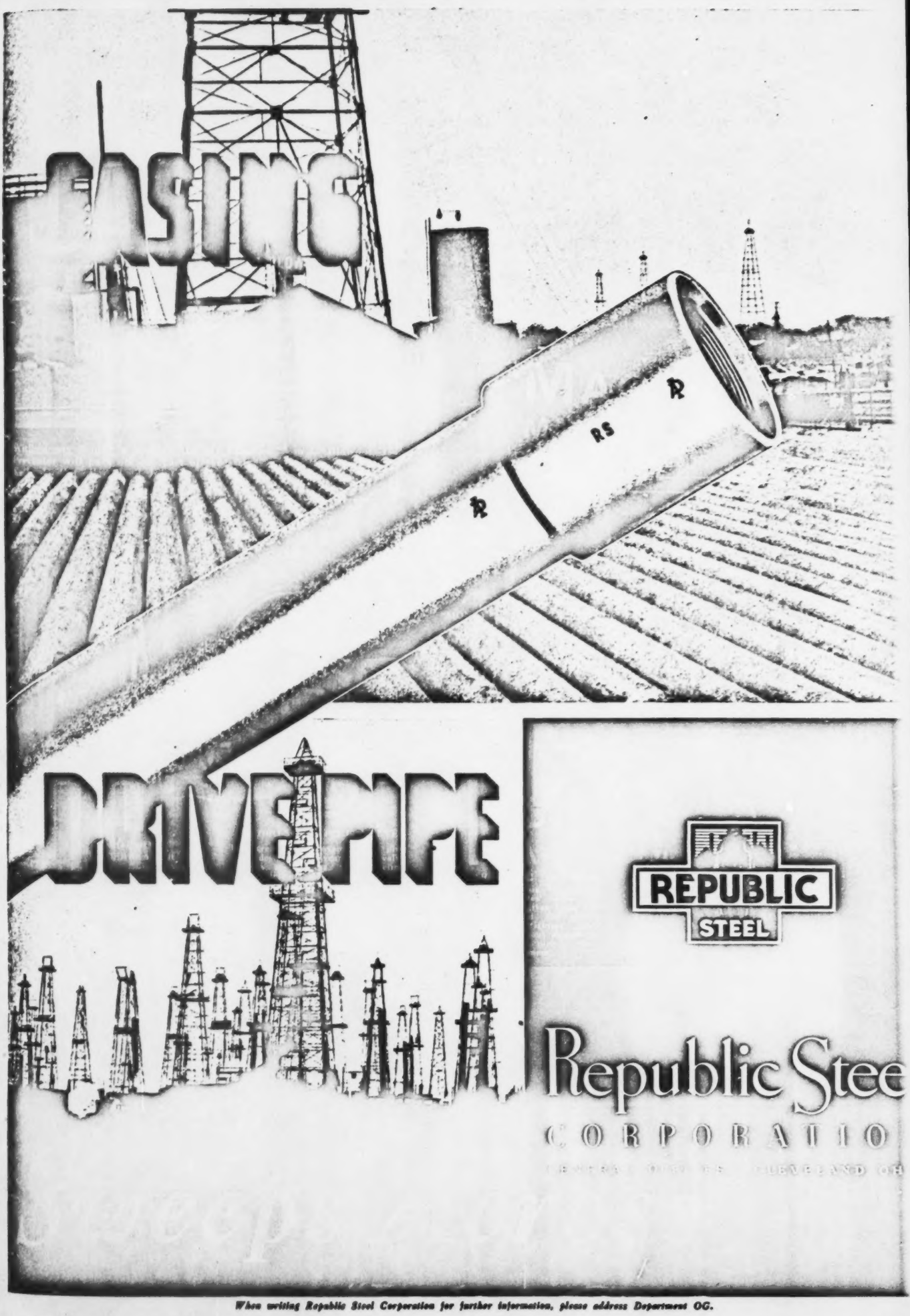

When writing Republic Steel Corporation for further information, please address Department OG.

FOR REAL VALVE VALUE

If you could take one of the Darling Improved Cast Steel Gate Valves and *cut it in half*—as you would an apple—you'd thoroughly appreciate the advantages of buying valves on a basis of *inside information!*

You'd notice—among other things—a deep stuffing box of ample proportions, an alloy stem of extra large diameter—accurately machined with smooth threads and integral collar. Your eyes would be attracted to the one piece alloy wedge or gate split (in the center of the double grooved wedge) to provide flexibility to compensate for varying conditions of pressure. The strong hinged connection between stem and wedge would appeal to you—and you'd instantly appreciate the accurate alignment of parts.

These [illegible] space of this advertisement [illegible] But you can—and [illegible] valve in half!

Just write today for [illegible] which illustrate the [illegible] Darling engineering development—*inside and out!* Study the construction at your leisure—then specify Darling Improved Cast Steel Gate Valves for refinery, process, power plant and other high pressure and temperature service. They're available in regular carbon, stainless steel, or other alloys—with regular stainless or special alloy mounting for corrosive conditions.

DARLING VALVE & MANUFACTURING CO., WILLIAMSPORT, PA.

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IMPROVED CAST STEEL GATE VALVE

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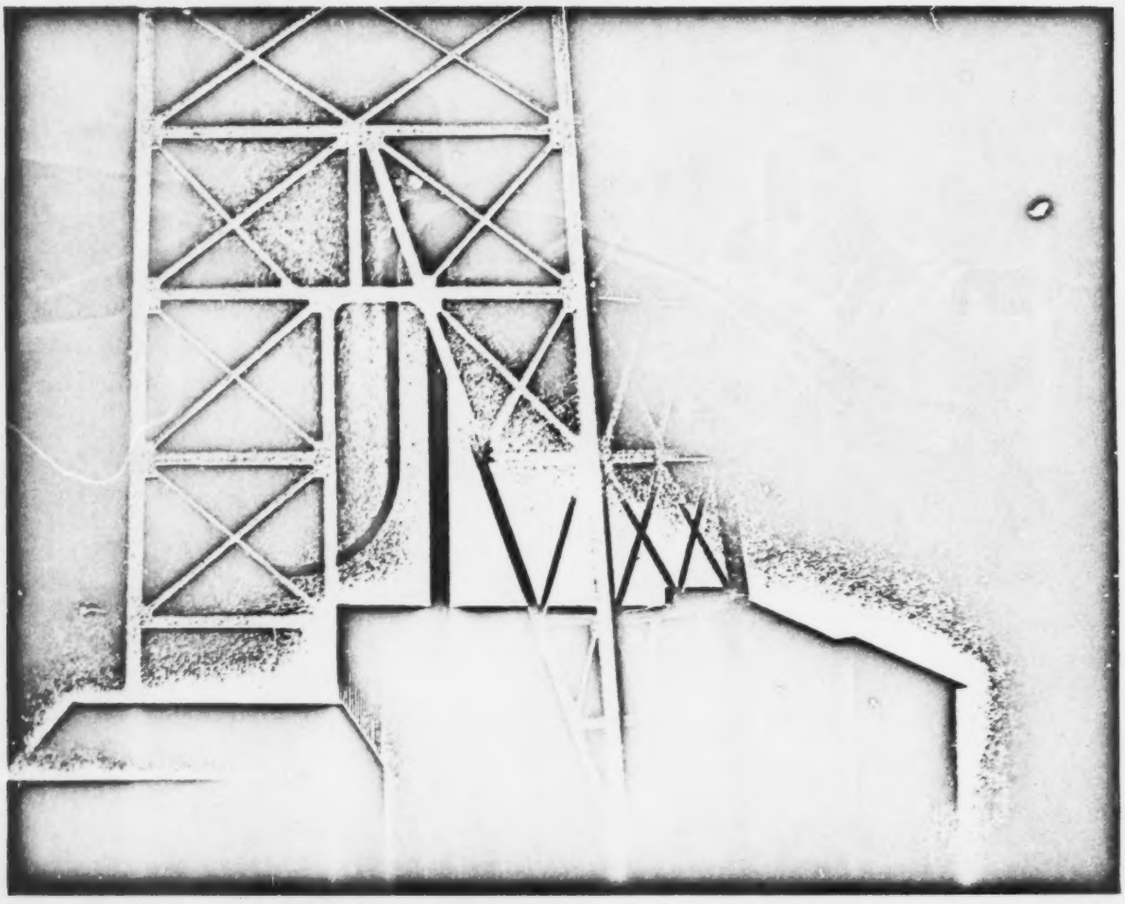

No Alibis Needed — with MOLY

ALIBIS have no standing in the oil fields. . . . Equipment either works or is thrown out. Moly steels ask no quarter—need no alibis. They've proved their long-term dependability in many types of drilling tools, including some that encounter the toughest of going—such as rock core heads.

Nickel-Moly steel in core-head cutters withstands the shock loads and abrasive action better than anything else. Cutters can be run at higher speeds and still last longer—especially in hard-rock formations.

True, every one's production tools are not working in steel-torturing rock a mile or more deep. But every one is interested in having them last as long, and cost as little, as possible. Molybdenum—"industry's most versatile alloying element"—has helped in countless cases. Investigate it in connection with your steel and iron requirements.

Moly's wide range of applications is covered in our technical book, "Molybdenum," free to engineers and production heads. Write for it. Ask also to be placed on the mailing list of our periodical newssheet, "The Moly Matrix." And you are welcome to the facilities of our experimental laboratory. Climax Molybdenum Company, 500 Fifth Avenue, New York.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

MOLY

CUTS COSTS

CREATES SALES

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Petroleum Electric Power Club 27
Petroleum Engineering, Inc.
Petroleum Equipment Company
Petroleum Iron Works Company
Petroleum Specialty Company, The
Petty Geophysical Engineering Co.
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Pittsburgh Equitable Meter Co.
Pittsburgh Steel Company
Polymerization Process Corporation, The

P

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R

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Reading-Pratt & Cady
Rector Well Equipment Co., Inc.
Reed Roller Bit Company 39-51
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Reilly Tar & Chemical Corporation
Republic Steel Corporation
Reber Laboratories
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Ryerson & Son, Inc., Joseph T.

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Security Engineering Co.
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Sinclair Refining Company, Inc.
S.K.F. Industries, Inc.
Skinner Co., M. B.
Smith, A. O., Corporation
Smith Company, E. M.
Smith, Nowery J., Supply Company
Smooth-On Mfg. Co.
South Chester Tube Co.
Southern Alkali Corporation
Spang, Chalfant & Co., Inc.
Spang and Company
Sperry-Sun Well Surveying Co.
Standard Brake Lining Co. 53
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Star Drilling Machine Company
Star Manufacturing Company
Staynew Filter Corporation

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Taylor Instrument Companies
Texas Chemical Company
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Timken Roller Bearing Company
Timken Steel & Tube Co.
Tnemec Company, Inc.
Toledo Pipe Threading Machine Co.
Trackson Company
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Trinity Portland Cement Company.
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U

Union Carbide & Carbon Corporation
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Union Rubber & Asbestos Co.
Union Wire Rope Corporation ..... Inside Front Cover
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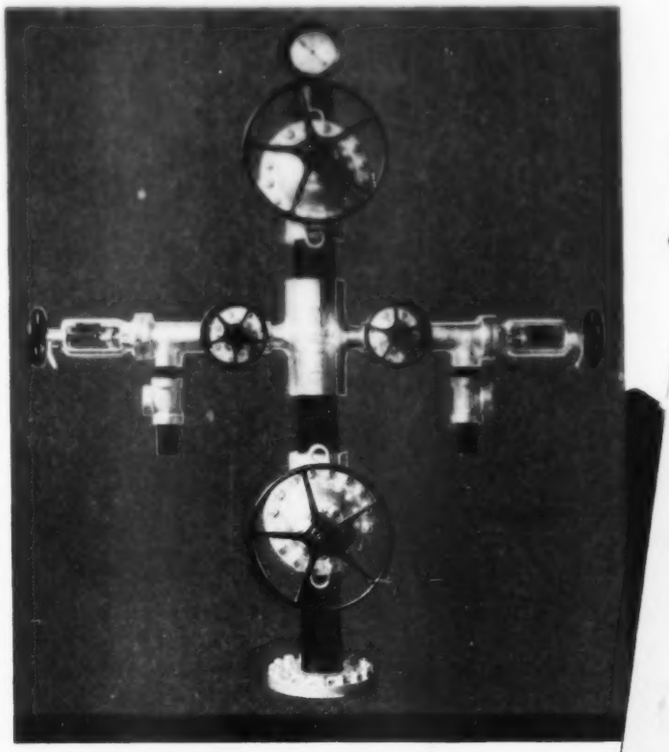
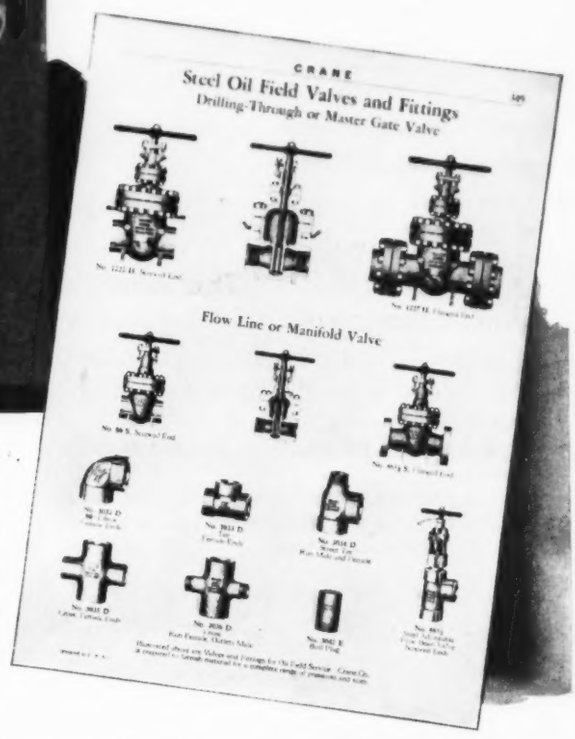
W. K. M. Company, Inc.
Wolcott Bldg., The
Worthington Pump & Machinery Corporation

Y

Young Engine Corp.
Youngstown Sheet & Tube Co., The

YOU CAN PUT THESE VALVES IN TO *Stay*





● Crane 86S Wedge Disc Gate Valves for 3,000 pound flow-line or manifold service will stay on the job for years with only minimum maintenance.

Every precaution has been taken in their design to insure absolute tightness. The bonnet joint, (ring type joint) for example, may be taken down and put together as often as necessary, using the same gasket, without fear of leakage.

All thread lengths and metal thicknesses are made to give maximum strength and durability. Each part is made of a metal best suited for that particular service. Crane craftsmen work to precision standards and their work is subjected to close inspection. Each valve is individually tested at 6,000 pounds.

This careful attention to details and thorough testing characterizes all Crane valves and fittings for the oil and natural gas industry. Standardize upon them for absolute tightness and long service life. Stocks are maintained in all oil and natural gas centers.

For further information about Crane Valves for the oil and natural gas industry, see the new Crane No. 52 catalog.

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Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

CARDWELL ALL STEEL

REG. U. S. TRADE MARK PAT. OFFICE

THIS TRADE MARK INSURES HIGHEST QUALITY AT LOWEST PRICE

"CATERPILLAR" TRACTOR MOUNTED OIL FIELD HOISTS *and* PIPE LINE LIVE BOOMS.

TREUIL MONTÉ SUR TRACTEUR Á CHENILLES ET MÂT DE LEVAGE DE "PIPE LINE" POUR L'INDUSTRIE DU PÉTROLE.

GRÚAS PARA TRABAJOS DE CAMPOS DE PETRÓLEOS MONTADOS EN TRACTORES "CATERPILLAR" Y CABRIAS MOVIBLES PARA TUBERÍA.

Single Drum with Spudder

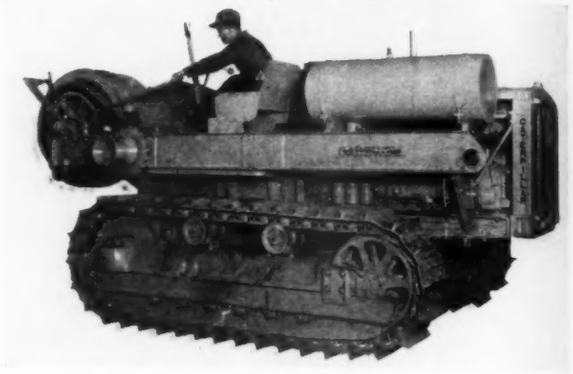
Tambour simple avec appareil pour "Spudding"

Tambor Sencillo con Polea Eccéntrica para Barrena Principiadora

Available in **4** Sizes with "CATERPILLAR" Tractors

4 Grandeurs de tracteurs à chenilles peuvent être fournies.

Para Tractores "CATERPILLAR" de cuatro tamaños



Single Drum with Rotary Drive

Tambour simple avec commande pour "Rotary"

Tambor Sencillo con Rueda Dentada para Mesa Giratoria

Double Drum "Caterpillar" Tractor Mounted Units Also Available

Il existe également des treuils à 2 tambours pour tracteurs à chenilles.

Equipos completos de tambor doble montados en tractores "CATERPILLAR." Se venden también.

A size of single or double drum tractor mounted units for rotary or cable tool drilling from top to bottom to 5000 ft.—Oil well servicing to 7000 ft.

Modèle d'un appareil à simple ou double tambour monté sur tracteur pour forage au "Rotary" ou au câble jusque 1600m ou pour entretien de la sonde jusque 2300m.

Equipos de perforación para systemas "Standard" y "Rotatorio", con tambores dobles, montados en tractores y expresamente hechos para perforar pozos de 5,000 pies de profundidad, y adecuados para limpiar y acondicionar pozos de 7,000 pies.

WHY PAY MORE WHEN THE BEST IS CHEAPEST?

POURQUOI PAYER PLUS QUAND LE MEILLEUR COÛTE LE MOINS

POR QUÉ PAGAR PRECIOS EXHORBITANTES CUANDO LO MEJOR SE PUEDE COMPRAR BARATO?

Front end winch optional.
Le treuil avant est facultatif.
Cabria para frente de tractor si se desea.

Pipe line booms available in 4 sizes with "CATERPILLAR" TRACTOR.

Mâts de levage de "Pipe Line" montés sur les 4 grandeurs de Tracteurs à chenilles.

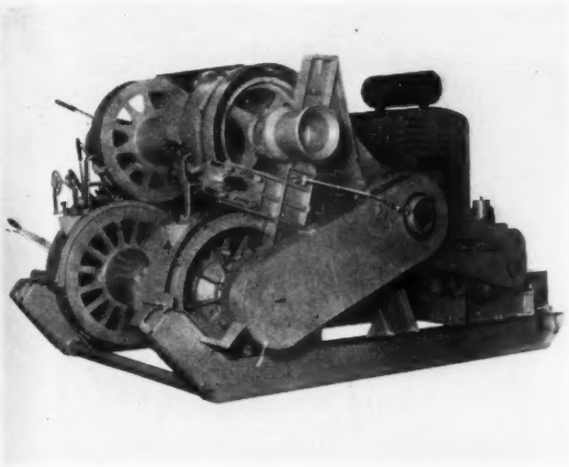
Cabrias para tubería montadas en tractores "CATERPILLAR" de cuatro tamaños.

ALLSTEEL PRODUCTS MFG. CO.

Wichita, Kansas, U. S. A.
801 So. Wichita St., P. O. Drawer 2001
Cable address "ALLSTEEL" Phones L. D. 289, Local 4-4381—4-4389

DOUBLE DRUM SERVICING HOISTS

Treuils à double tambour pour entretien des puits.
Grúas para acondicionamiento de pozos, con tambor.



Built in
3 Sizes
Se fait en 3 grandeurs.
Se fabrica en
3 tamaños

Double Drum
Draw Works
Treuil à double
tambour.
Grúas con
tambor doble

Upper Drum Optional
Tambour supérieur
facultatif.
Tambor elevado si
se desea

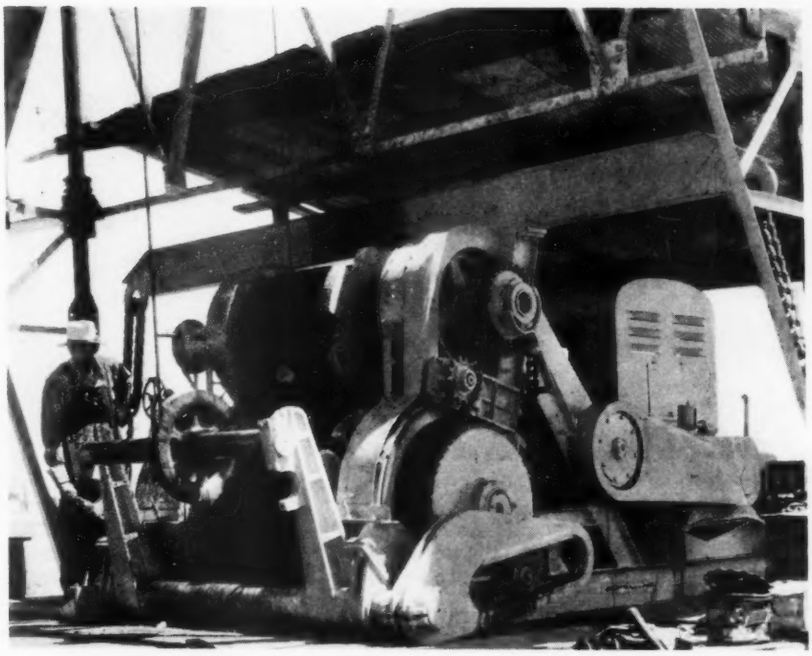
PORTABLE DRAW WORKS

Treuils et supports portatifs.
Grúas Portátiles.

All Double drum units available without rotary table drive or cable tool drilling attachments.

Tous les appareils à deux tambours peuvent être fournis sans table pour "Rotary" ou sans connexion pour forage au câble.

Todos los equipos se venden sin accesorios para mesa giratoria o para herramientas de patrón "Rig Standard".



Quickly Converted From Cable Tool to Rotary Drilling and Vice Versa.

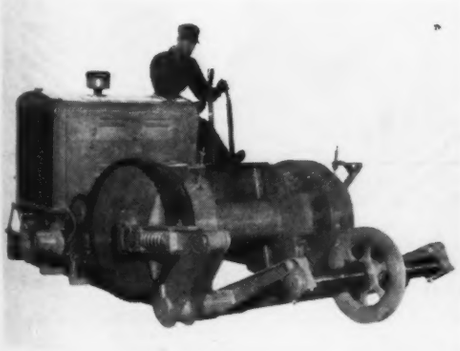
Conversion rapide du systême à câble en "Rotary" et inversement.

Puede convertirse sin pérdida de tiempo del sistema patrón "Standard Rig" al "Rotatorio", y viceversa.

Built in
four sizes
Se fait en 4 grandeurs.
Se fabrica en
cuatro tamaños

Cable tool drilling attachment
Connexions pour forage au câble
Accessorios para herramientas de patrón "Standard Rig"

For wells
of any depth
Pour puits de toutes profondeurs.
Para pozos de caulquiera profundidad



Service With Rotary or Cable Tools With These Highly Practical Light Weight Units.
Entretien pour type "Rotary" ou "Câble" avec ces appareils légers et très pratiques.
Estos equipos portátiles son prácticos y durables, ya se usen con maquinaria de sistema "Rotatorio" o patrón "Standard Rig".

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TRADE MARK

PLASTIC PACKING

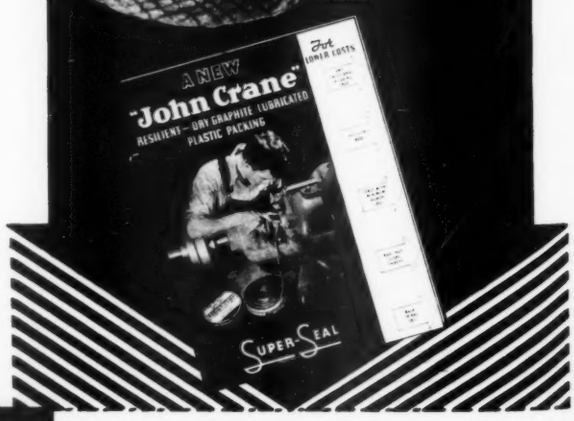
RESILIENT
ANTI-FRICTIONAL
NEVER DRIES OUT

DRY GRAPHITIZED

Thru and Thru!

Every strand of the long fibre asbestos used in SUPER-SEAL is thoroughly graphitized—the graphite impregnates every fibre through and through—assuring a permanent dry lubrication at the wearing face. Present day high speed equipment under high temperatures and high pressures demand this type of packing.

For the Petroleum Industry, SUPER-SEAL No. 3 is the popular and successful packing with duprene binder especially developed for oils, petroleum distillates and solvents. It will give long and efficient performance on Reciprocating, Rotary and Centrifugal Pumps and Valves. (Temperatures up to 350° F.) Use coupon and get SUPER-SEAL bulletin.



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Please send SUPER-SEAL bulletin.

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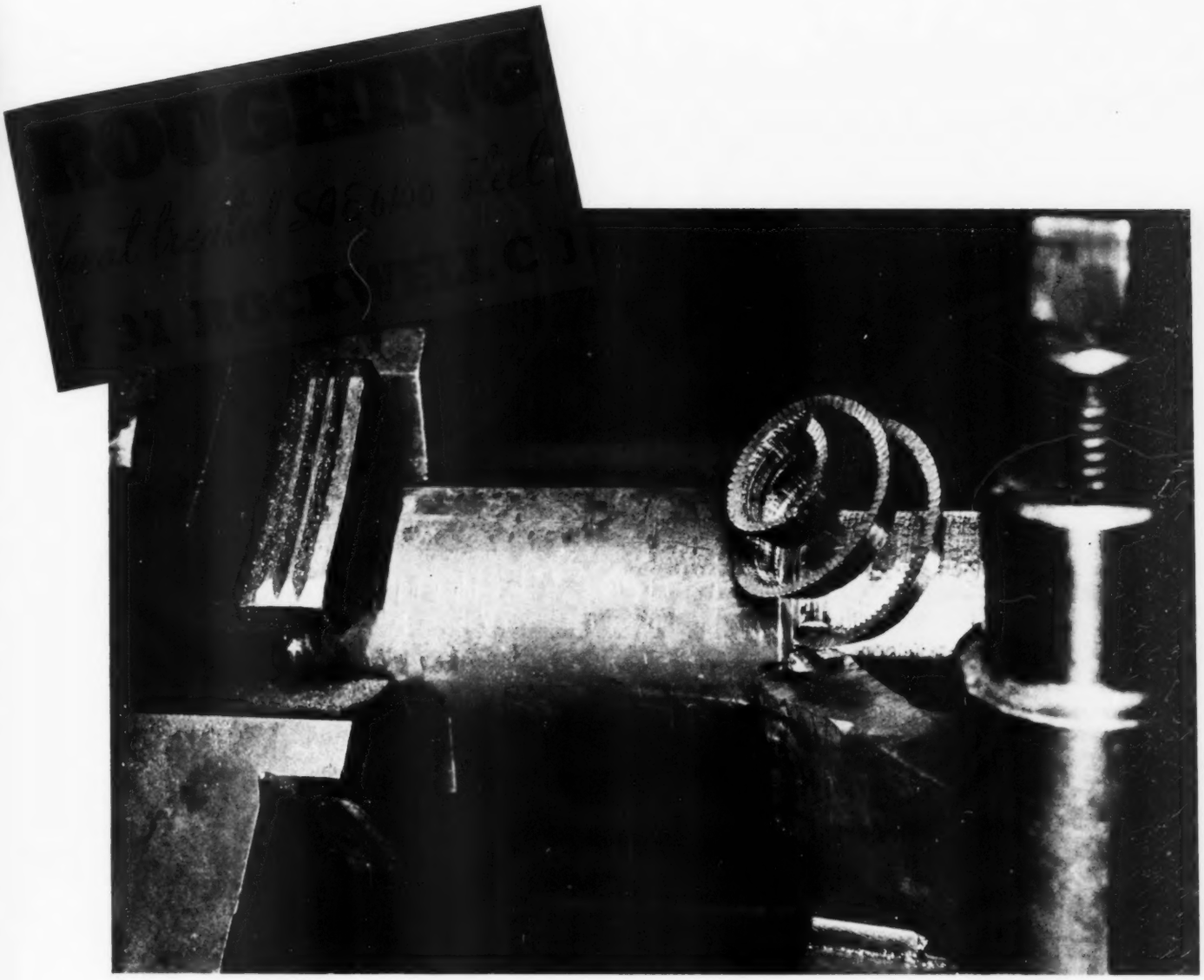
The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription prices: Domestic, $6.00 a year; foreign, $7.00 a year. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Oklahoma, under the Act of March 3, 1879.



With a tool costing

STOODITE "54" and Stoodite "63", the latest developments in machine tool metals, make it possible for you to make your own lathe, shaper and boring mill tools at extremely low cost. • A few drops of either Stoodite "54" or Stoodite "63" on the tip of an S.A.E. 1045 steel shank and a little grinding complete the operation. • Tools tipped with Stoodite "54" are excellent for machining cast iron and plain steels. • Tools tipped with Stoodite "63" may be used for cutting hard tough materials, such as chilled cast iron and heat treated alloy steels. • Write for details.

STOODY COMPANY

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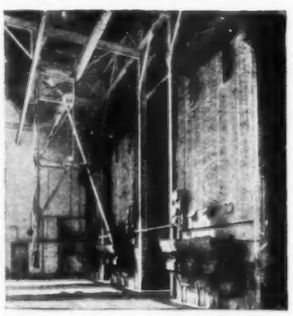
Drop Forged Steel Valves and Fittings are forged from carbon steel billets or stainless steel if desired. They are unexcelled for high pressures, high temperatures, and resistance to corrosion and erosion.

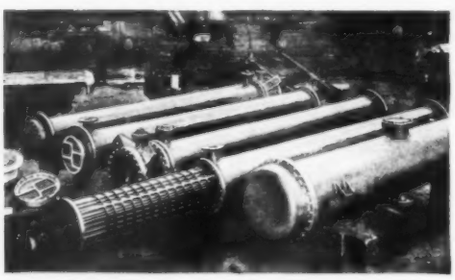
THE worlds leading oil refineries specify Vogt products because of their distinctive features of design and construction for maximum efficiency and economy of operation.

In addition to the products shown here, we manufacture Continuous Rotary Filters, Break Down Filter Presses, Oil Chilling Machines, Ammonia Condensers, Brine Coolers, etc., as well as special equipment which we build to order upon receipt of information.

Descriptive literature covering all Vogt products may be had upon request.

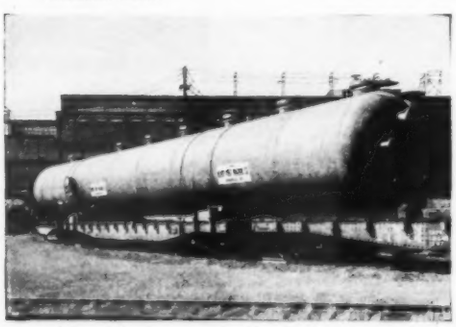


Water Tube Boilers, in bent tube, sectional header or box header types, for any fuel.

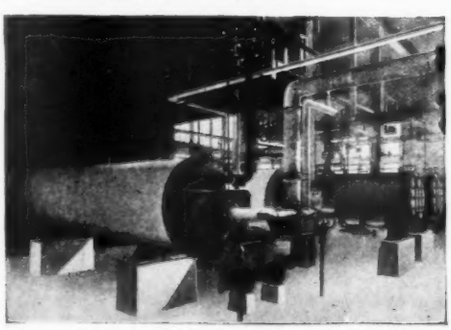


Heat Exchangers for high pressure or vacuum service, with fixed or removable tube bundles and baffles, are of cast or welded all steel construction as desired. Special consideration is given to the selection of materials for handling corrosive fluids.

Fusion welded pressure vessels for every pressure and temperature complying with the A.S.M.E. Code.



Complete Absorption and Compression Refrigerating Systems for every refrigerating service and with booster units may be arranged for temperatures as low as minus sixty to minus seventy degrees Fahrenheit.



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LOUISVILLE, KENTUCKY

CABLE ADDRESS—VOGT

NEW YORK PHILADELPHIA CLEVELAND CHICAGO
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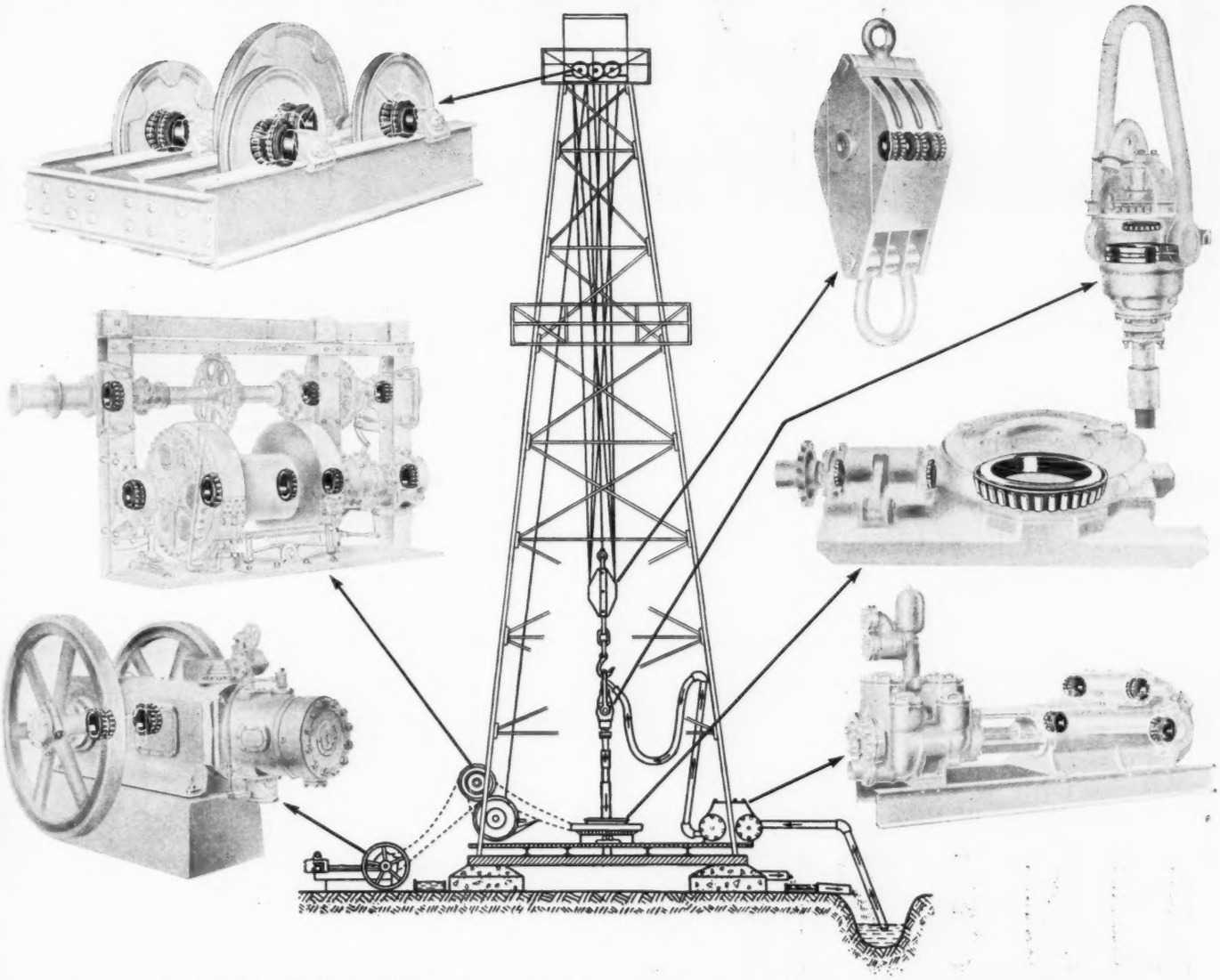
Drilling Down To Two Miles Deep With TIMKEN BEARING EQUIPMENT



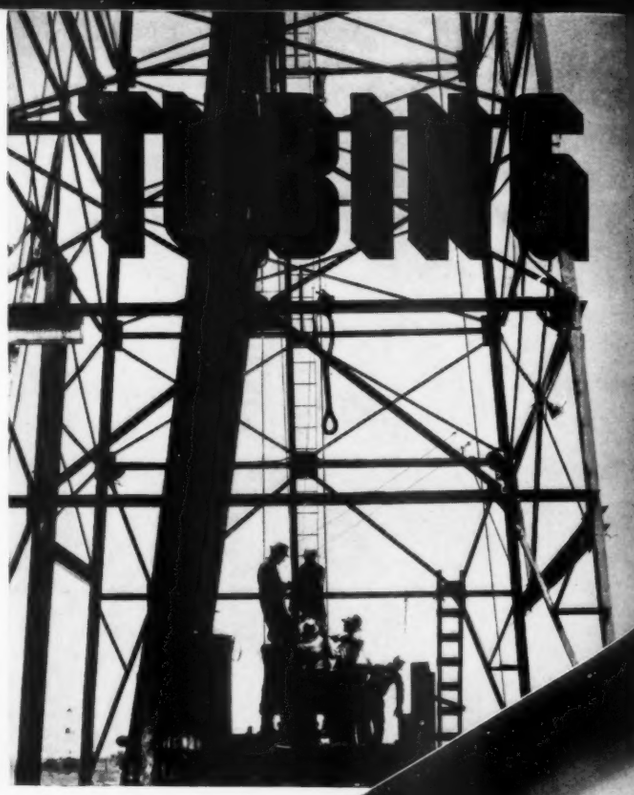
No job in the oil fields emphasizes the value of Timken Bearings as strongly as modern rotary drilling. The variety of equipment used and the conditions under which it has to operate call for exceptional bearing versatility and endurance. High speeds, tremendous radial, thrust and shock loads, and the necessity of holding moving parts in correct and constant alignment combine to put a premium on efficient bearing performance. Timken Bearings have demonstrated again and again their ability to meet every requirement in crown blocks, traveling blocks, swivels, rotaries, draw works, mud pumps and engines with maximum economy and unswerving dependability. Some of the deepest wells ever drilled stand to the credit of Timken Bearing equipment. Operators know it pays to use it.

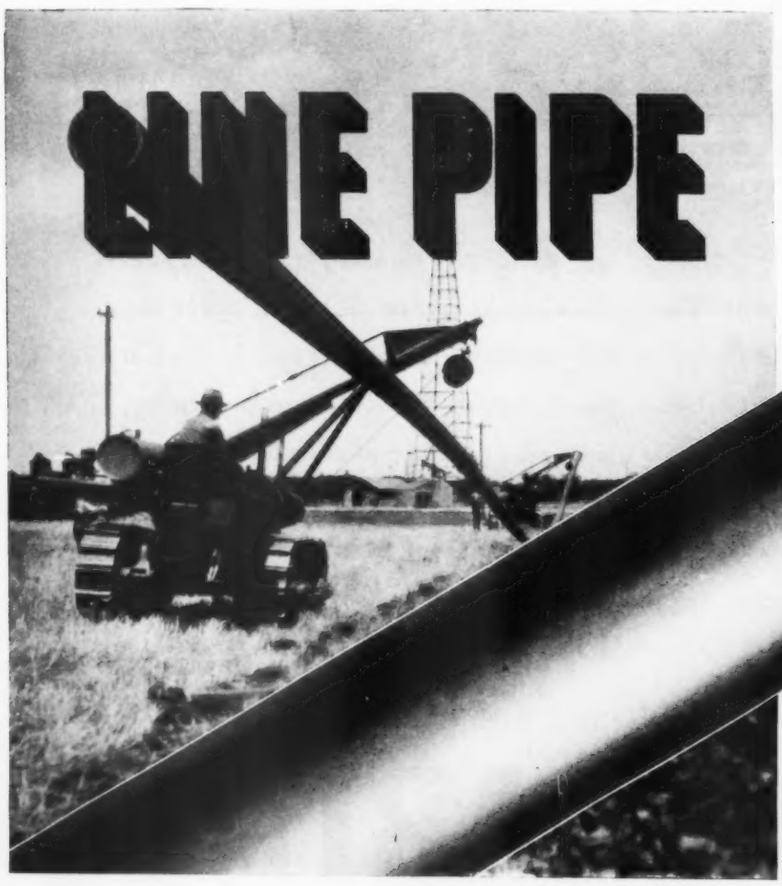
THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

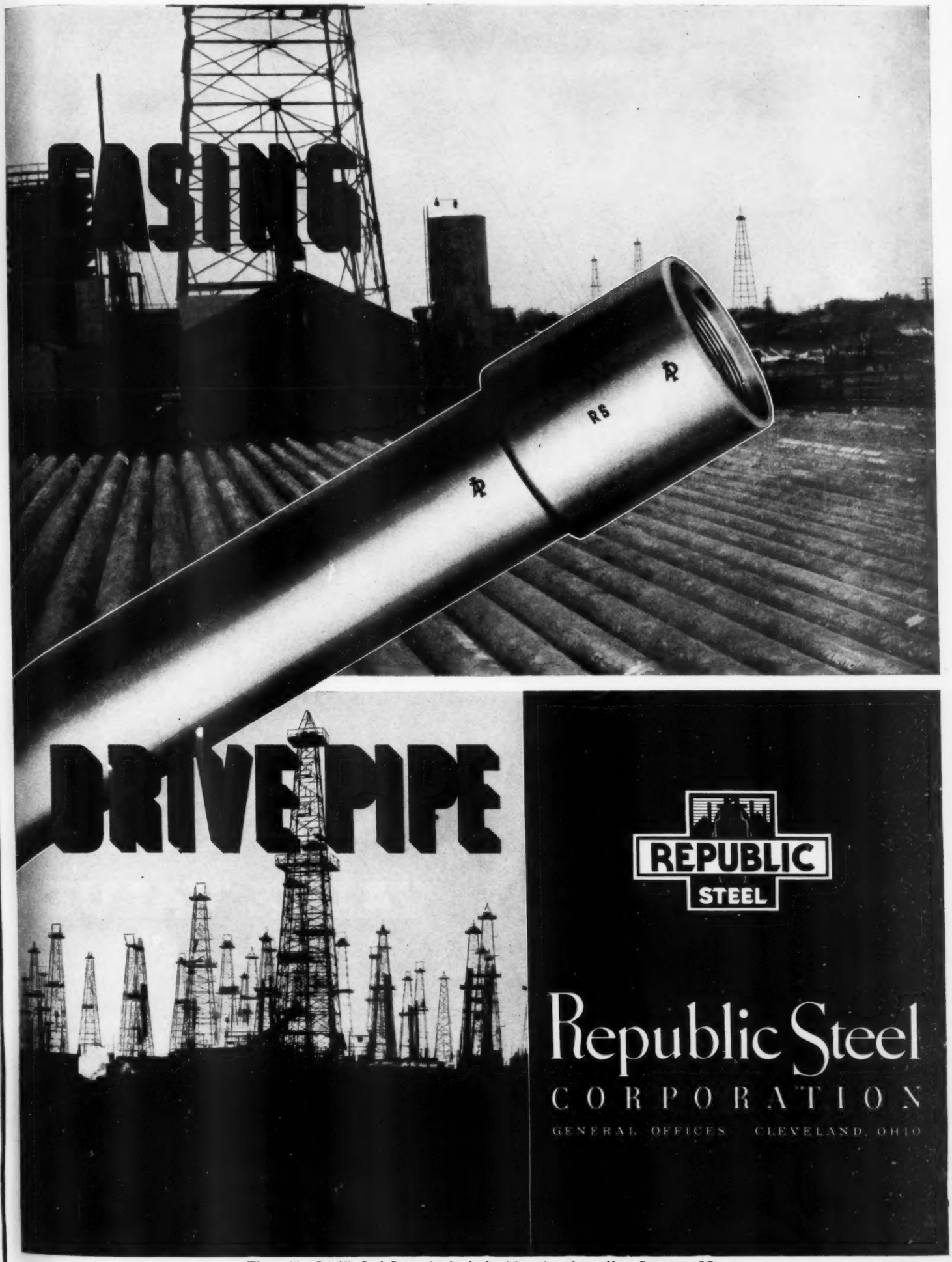
TIMKEN *TAPERED ROLLER* BEARINGS

REPUBLIC

In these four dependable products, you'll find the same high quality for which all Republic Steel products have established a wide reputation. You'll find high yield point with high ductility steel... uniform wall thickness... uniform diameter ... perfect roundness... absolute straightness... ease of bending... ease of welding... freedom from scale inside and out ... double lengths without mid-weld. • You'll be time and money ahead by using Republic Steel as the source of supply for all your piping requirements... casing, tubing, drive pipe and line pipe, as well as butt weld, lap weld and electric weld pipe of steel, copper-bearing steel and rust-resisting Toncan Copper Molybdenum Iron. Write for further information.







When writing Republic Steel Corporation for further information, please address Department OG.

LOOK INSIDE

FOR REAL VALVE VALUE

If you could take one of the Darling Improved Cast Steel Gate Valves and *cut it in half*—as you would an apple—you'd thoroughly appreciate the advantages of buying valves on a basis of *inside information!*

You'd notice—among other things—a deep stuffing box of ample proportions, an alloy stem of extra large diameter—accurately machined, with smooth threads and integral collar. Your eyes would be attracted to the one piece alloy wedge or gate split (in the center of the double grooved wedge) to provide flexibility to compensate for varying conditions of pressure. The strong, hinged connection between stem and wedge would appeal to you—and you'd instantly appreciate the accurate alignment of parts.

These are only a few of the things you'd see—and the space of this advertisement is far too limited to permit mention of the rest. But you can—and *should—see for yourself!* And you needn't "cut a valve in half" to do it.

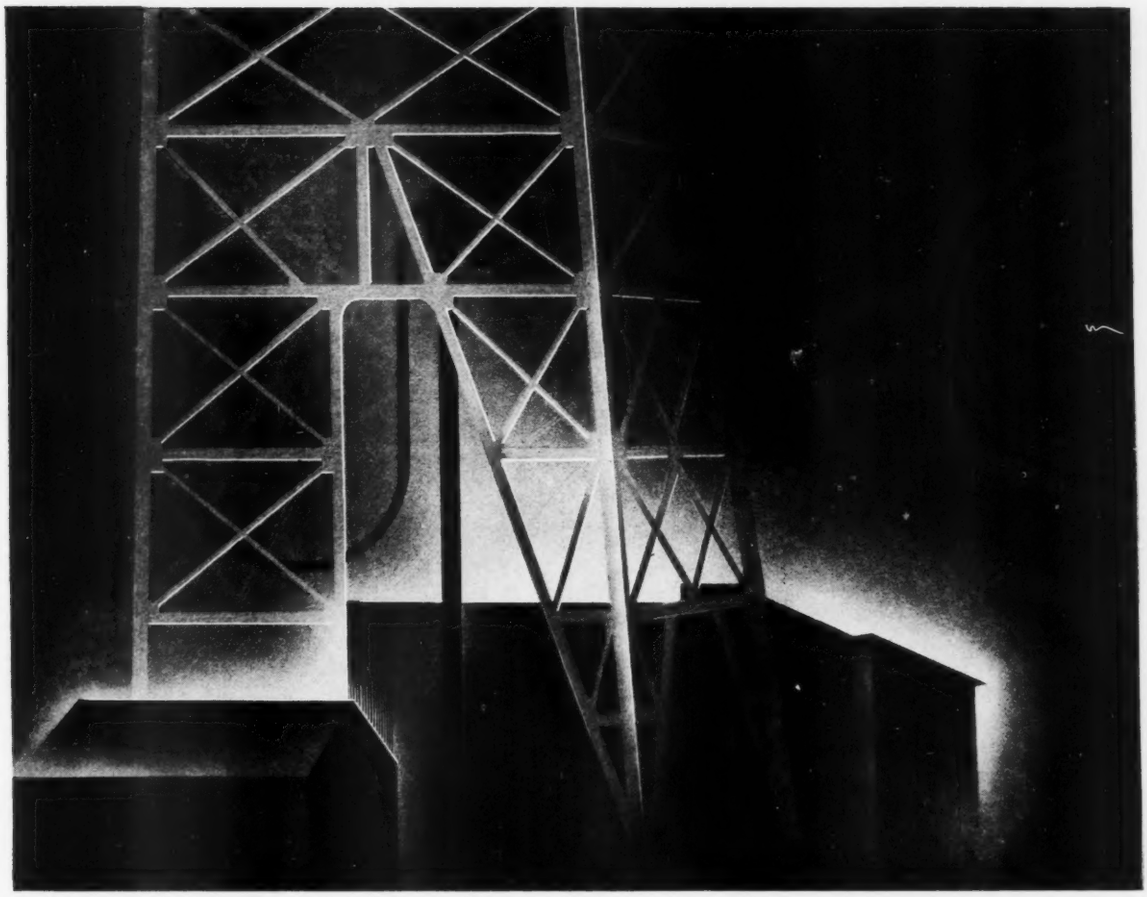
Just write today for a novel, interesting folder which illustrates this latest Darling engineering development—*inside* and *out!* Study the construction at your leisure—then specify Darling Improved Cast Steel Gate Valves for refinery, process, power plant and other high pressure and temperature service. They're available in regular carbon, stainless steel, or other alloys—with regular, stainless or special alloy mounting for corrosive conditions.

DARLING VALVE & MANUFACTURING CO., WILLIAMSPORT, PA.

NEW YORK OKLAHOMA CITY HOUSTON

DARLING

IMPROVED CAST STEEL GATE VALVE



No Alibis Needed — with MOLY

ALIBIS have no standing in the oil fields. . . . Equipment either works or is thrown out. Moly steels ask no quarter — need no alibis. They've proved their long-term dependability in many types of drilling tools, including some that encounter the toughest of going — such as rock core heads.

Nickel-Moly steel in core-head cutters withstands the shock loads and abrasive action better than anything else. Cutters can be run at higher speeds and still last longer — especially in hard-rock formations.

True, every one's production tools are not working in steel-torturing rock a mile or more deep. But every one is interested in having them last as long, and cost as little, as possible. Molybdenum — "industry's most versatile alloying element" — has helped in countless cases. Investigate it in connection with your steel and iron requirements.

Moly's wide range of applications is covered in our technical book, "Molybdenum," free to engineers and production heads. Write for it. Ask also to be placed on the mailing list of our periodical newssheet, "The Moly Matrix." And you are welcome to the facilities of our experimental laboratory. Climax Molybdenum Company, 500 Fifth Avenue, New York.

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MOLY CUTS COSTS CREATES SALES

BALANCED TRACTION

GREATER SAFETY
•
GREATER DEPENDABILITY
•
FASTER SERVICE
•
WIDER RANGE OF OPERATION
•
GREATER ECONOMY OF OPERATION

FWD
FOUR-WHEEL-DRIVE
TRUCKS

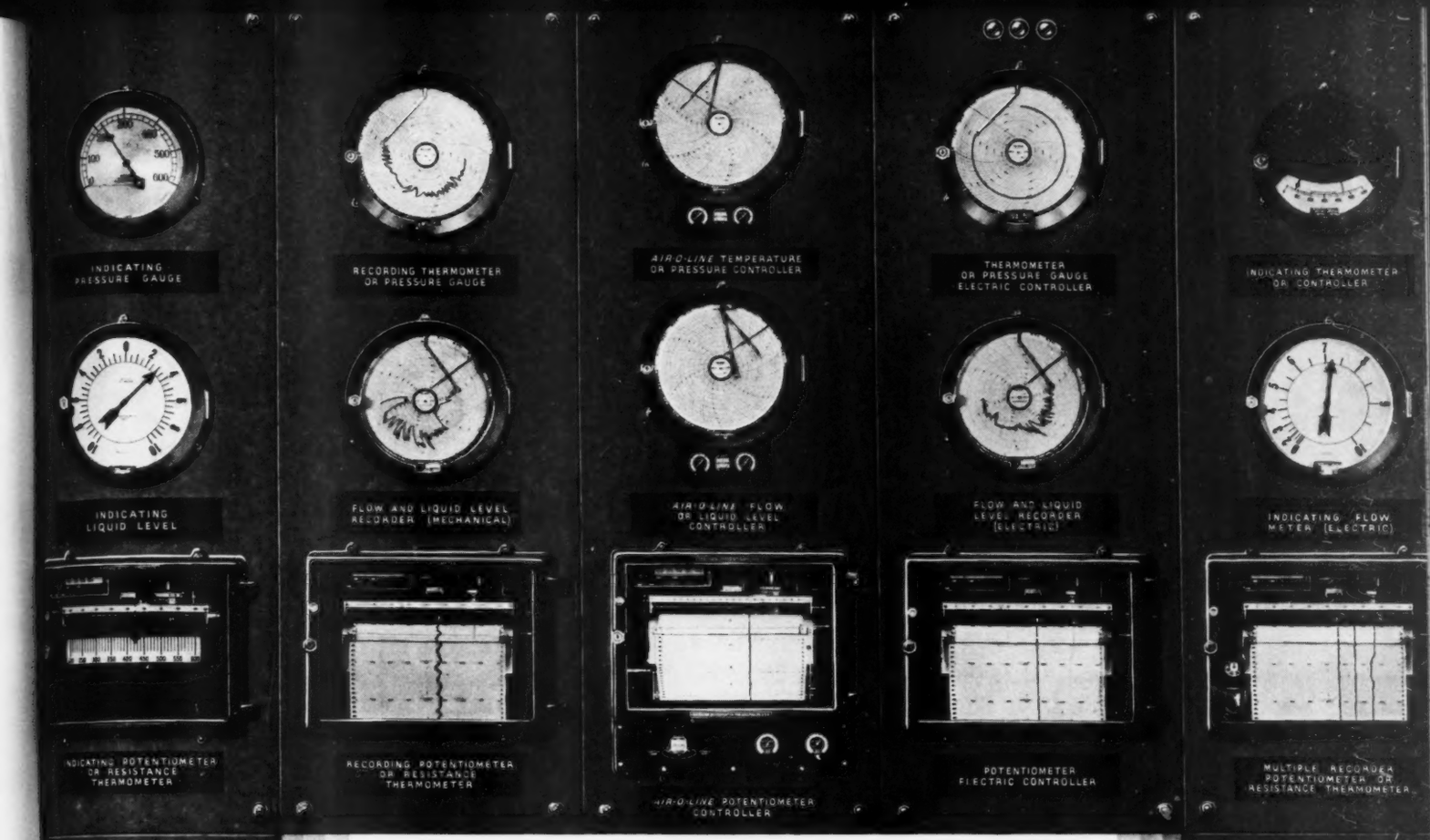
Controlled Power enables the FWD Truck to "Take" roads as they come

In every trucking service where positive traction is essential to negotiate roads under tough conditions — the FWD Truck will perform dependably and economically . . . Its four-wheel-drive principle, that of power and load distribution, gives it positive traction in mud, sand, loose soils, snow and on slippery pavements. In the construction of the FWD, a center differential is used to distribute the power equally to the four driving wheels . . . Its reserve power, rugged construction throughout, and true application of the four-wheel-drive principle, insure continuous operation under any conditions. You'll find speed, safety, dependability, economy, and unmatched performance in the FWD — the pioneer of Four Wheel Drive Trucks.

Let us give you the details of FWD Controlled Power.

THE FOUR WHEEL DRIVE AUTO COMPANY
CLINTONVILLE, WISCONSIN
***Canadian Factory,* KITCHENER, ONTARIO**

THE SAFEST TRUCK ON THE HIGHWAY


INDICATING PRESSURE GAUGE
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AIR-O-LINE TEMPERATURE OR PRESSURE CONTROLLER
THERMOMETER OR PRESSURE GAUGE ELECTRIC CONTROLLER
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FLOW AND LIQUID LEVEL RECORDER (ELECTRIC)
INDICATING FLOW METER (ELECTRIC)
INDICATING POTENTIOMETER OR RESISTANCE THERMOMETER
RECORDING POTENTIOMETER OR RESISTANCE THERMOMETER
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THEY GIVE *Added* EFFICIENCY *to* OIL REFINING

To maintain balance in your continuous processes — insure greater throughput, closer] cuts —higher octanes and secure maximum yield at lowest costs.

You can rely on the accuracy and be confident of the dependability of Brown Refinery instruments in the operation of Distillation Plants—Cracking Units—Vapor Recovery Plants—Acid Treating Plants—Polymerization Plants—Hydrogenation Plants—Residuum Treating Units—Solvent Treating Plants—Dewaxing Plants and Gasoline Absorption Plants.

Wherever they are installed—efficiency is increased because they afford closer measurement and more positive control of temperatures, pressures, flows, liquid levels.

Brown Indicating and Recording Instruments can be mounted on individual panels or grouped on a central control board. Furnished in standard universal cases, adaptable for any style of panel mounting, they present a uniform and well-balanced appearance. Our engineers will be glad to recommend the instruments that will most economically meet your plant requirements.

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For indicating, recording and controlling temperatures in stills, towers, furnaces, flues, lines, etc. Catalog No. 1101.

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For indicating, recording and controlling the flow of gasoline, gas, steam, water, air, and other liquids, gases or vapors. Catalog No. 2004.

CO_2 METERS
For indicating, recording and controlling %CO_2 in still and boiler furnace to check and insure proper firing efficiency. Catalog No. 3004.

AUTOMATIC CONTROLS
For automatically controlling, within desired limits, temperatures, pressures, flows, tower levels, electric and air operated. Catalog No. 8901.

THERMOMETERS
For indicating, recording and controlling temperatures ranging up to 1200° F. Catalog No. 6703.

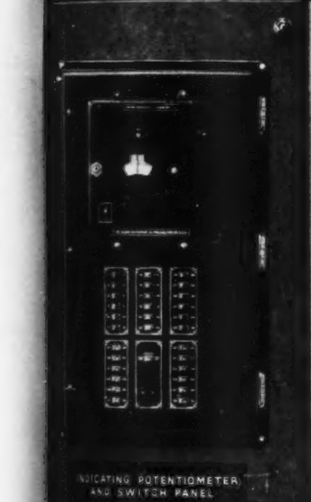
PRESSURE AND VACUUM GAUGES
For indicating, recording and controlling pressures and vacuums in stills, towers, steam and power plants, etc. Catalog No. 6703.

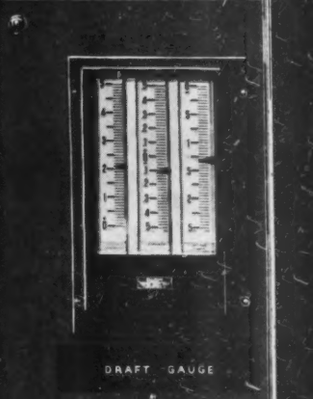
LIQUID LEVEL GAUGES
For indicating, recording and controlling the level of petroleum and petroleum liquid products in tanks, towers, etc., at a distance. Catalog No. 6703.

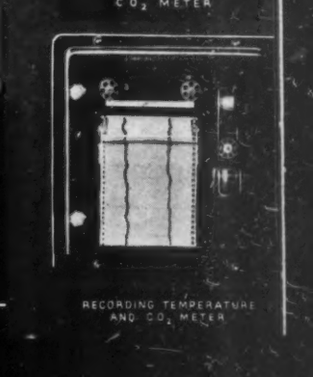
RESISTANCE THERMOMETERS
For indicating, recording and controlling low temperatures such as are encountered in dewaxing plants. Catalog No. 9001.

Write for Catalogs and Information The Brown Instrument Co., *a Division of Minneapolis-Honeywell Regulator Company*, 4488 Wayne Avenue, Philadelphia, Pa. Canadian Factory: 117 Peter St., Toronto, Canada. Branch offices in all principal cities.

European Address: N. V. N. Minneapolis-Honeywell Co., Wydesteeg 4, Amsterdam-C, Holland







BROWN INSTRUMENTS

AND

MINNEAPOLIS-HONEYWELL CONTROL SYSTEMS

RECORDING .... INDICATING .... ELECTRIC AND AIR OPERATED CONTROLLERS

To Measure and Control is to Economize

THERE IS NO STANDING STILL!

Refiners are constantly faced with change—change in standards of quality—change in proportion of various products required to meet marketing conditions—change in cracking technique—design—equipment.

Gasoline Products Company, Inc., as licensor of modern cracking processes, is in a position to assist refiners to meet these changes and protect present as well as future profits!

LICENSES granted under United States and Foreign Patents for: Cross, de Florez, Holmes-Manley, Tube and Tank Cracking Processes, Uni-Coil Injection Process and Combination Cracking U
Licensing Agents THE M. W. KELLOGG CO., Jersey City, New Jersey, or its *European Representative* COMPAGNIE TECHNIQUE des PETROLES, 134 Boulevard Haussmann, Paris, Fran

GASOLINE PRODUCTS COMPANY

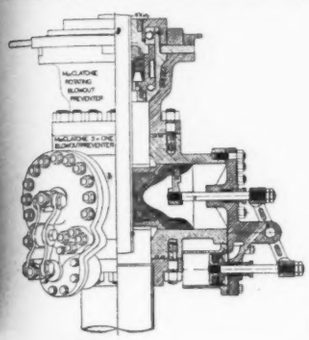
INCORPORATED

11 COMMERCE STREET . NEWARK NEW JERSEY

ISERS THE WORLD OVER *Know* THAT
MAC CLATCHIE TOOLS *are best in their field*

USE THE MacCLATCHIE HOOK UP FOR "PRESSURE DRILLING"

Operatable from derrick floor—withstands any pressure encountered—fast closing—packs off any part of drill stem without changing packers—eliminates extra equipment.



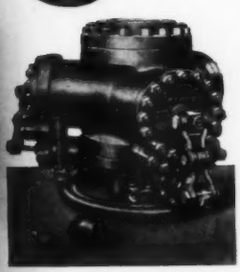
Both units of the MacClatchie Pressure Drilling Hookup have been designed for the safety of crews. They both operate instantly from the derrick floor, thereby eliminating the hazard of men entering an oil-drenched and gas-filled cellar.

•

ROTATING BLOWOUT PREVENTER

The rotating unit is operated by pulling a rope which is run from the cellar to the derrick floor—latching and unlatching the Kelly Packer instantly. The packer includes the packing assembly and the swivel. The packing assembly rotates with the Kelly and Swivel, providing anti-frictional bearings for the packing assembly. Designed for drilling under any mud or gas pressure.

•



5 IN 1 BLOWOUT PREVENTER

The "5 in 1" Blowout Preventer is operated by turning a throttle valve—packing off any portion of the string regardless of shape or size, in 55 seconds or less. Since no sand or mud can interfere with its functioning, it has a certainty of action. In no other equipment can be found these features: Adaptability to pack different sizes—phenomenal speed—positive operation.

Without any change in packing, the MacClatchie "5 in 1" Blowout Preventer will pack off any part of the string, such as Drill Pipe, Kelly, Drill Collar, Tool Joint or Pipe Collar.

SLUSH PUMP EQUIPMENT

Operators the world over depend on MacClatchie Pump parts for the most satisfactory and economical operation of their slush pumps. MacClatchie Mud Pump Valves, Pistons, Liners and Pump Rods are guaranteed to give the most satisfactory service. To prove their merit they will be sold on a satisfaction guarantee basis.

HOLE CONDITIONING

Years of experience in building hole-conditioning tools have developed MacClatchie Wall Scrapers and Underreamers to the point where they give the best possible performance. When it comes to Wall Scraping and underreaming, insist on a MacClatchie.

CEMENTING

MacClatchie Quick Union and Cement Heads have been adopted as standard equipment throughout the world. Their popularity is due to the fact that they are unquestionably the speediest and most convenient on the market.

PLUG VALVES

MacClatchie Hydro-Seal Plug Valves are manufactured in screw, flange, and union ends. Hand or gear operated for working pressure from 250 lbs. to 3,000 lbs. Because of their grease expanded lips, no packing nor packing glands are used, thus eliminating unnecessary friction.

CATHEADS

The MacClatchie Gearomatic Cathead is the only modern cathead for modern deep drilling and tight joints. Every superintendent, tool pusher or roughneck using the MacClatchie Gearomatic Cathead says it is superior to any other joint-breaking device they have ever used because it is geared 2 to 1.

MacCLATCHIE
MANUFACTURING COMPANY
COMPTON, CALIF. HOUSTON, TEXAS

WALL SCRAPER

Three Cutter Assembly gives a strong body and insures a true bore. Cutters eliminate vibration and "walk".

ROTARY UNDERREAMER

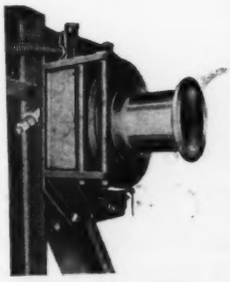
Known the world over for its simplicity and satisfactory reaming qualities. Especially desirable for export operators, as the wear on the body is absorbed by renewable parts. Its simplicity of operation makes it possible for the inexperienced to operate.

"HYDRO-SEAL" PLUG VALVE

The greatest improvement in plug valve design in 70 years. This valve employs no packing, thereby eliminating friction caused by packing glands and packing.

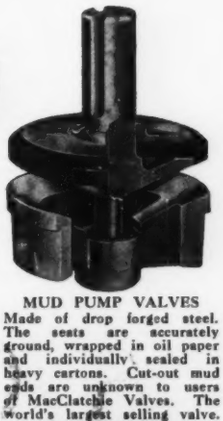
"MONEY SAVER" PUMP LINER

The low first cost and replacement cost of MacClatchie "Money Saver" Pump Liners will surprise you. Hardened and ground for the longest possible wear.



GEAROMATIC CATHEAD

The MacClatchie Gearomatic Cathead operates on a new principle. It gives twice the power at half the speed, breaking the tightest joints with ease, without damage to tongs, tong-dies, pipe or other equipment.



MUD PUMP VALVES

Made of drop forged steel. The seats are accurately ground, wrapped in oil paper and individually sealed in heavy cartons. Cut-out mud ends are unknown to users of MacClatchie Valves. The world's largest selling valve.

WEAR-EVER PUMP PISTON

Designed so that wear is absorbed by the rubbers, which are economically replaced for less than half the cost of a new piston.

SPECIAL TAPER ROD

A universal rod with a rod nut of such taper and so designed as to automatically tighten on rod threads and insure a firm grip on the piston. Also made with a Regular Universal or any Standard equipment taper.

QUICK CHANGE UNION, CEMENT HEADS AND UNION

Used the world over where the speediest and most convenient cementing equipment is desired.

AT Digboi, India, Smith Reaction chambers were rolled into position by these elephants. Later, the elephants supplied the motive power for the tackle that raised the vessels into position.

Smith Pressure Vessels are in use today in every refining center in America and abroad, including:

ARGENTINA, S. A.	INDIA
BELGIUM	FRANCE
BORNEO	ITALY
BRAZIL	JAPAN
CANADA	MEXICO
DUTCH WEST INDIES	ROUMANIA
DUTCH EAST INDIES	RUSSIA
EGYPT	SWEDEN
GERMANY	TRINIDAD
HOLLAND	WALES

A. O. SMITH
CORPORATION

MILWAUKEE, WISCONSIN • *BRANCH OFFICES:* NEW YORK. CLEVELAND, CHICAGO, TULSA, HOUSTON, LOS ANGELES

MAKING STEEL WORK FOR YOU AS IT NEVER DID BEFORE IN—
SMITH PRESSURE VESSELS—SMITH HIGH-YIELD CASING—SMITH LINE PIPE

SMITH PRESSURE VESSELS

Lined or Unlined—Any Size or Shape Within Transportation Limits

LUNKENHEIMER
350 lb. SP VALVES

for Oil Well Drilling Operations and High Pressure Gas, Oil and Hydraulic Service

BRONZE VALVES

350 lb. SP- 550° F.
1000 lb. GLP-150° F.

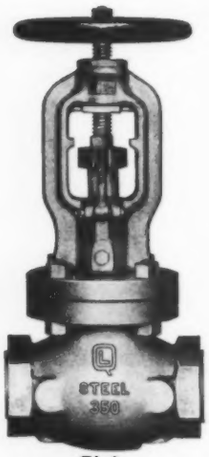
Fig. 1878 Globe
Renewable "NT4" Nickel Alloy Seat and Disc
Union Bonnet

Fig. 1879 Lift Check
Renewable Bronze Disc
Integral Seat

Fig. 1880 Swing Check
Renewable Bronze Disc and Side Plugs

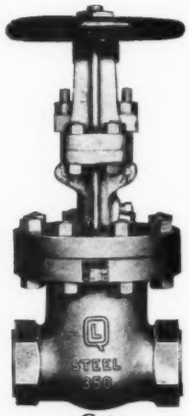
Fig. 1881 Gate
Renewable "NT4" Nickel Alloy Seats and Disc

STEEL VALVES 350 lb. SP-580° F.

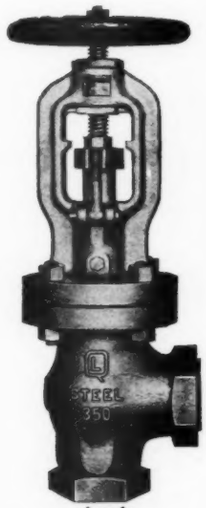


Globe
Fig. 1872 Screw Ends
*Fig. 1600 Flange Ends
Renewable Stainless Steel Stem and Disc
Nickel Alloy Seat Ring

Swing Check
Fig. 1490 Screw Ends
*Fig. 1491 Flange Ends
Renewable Stainless Steel Disc
Nickel Alloy Seat Ring



Gate
Fig. 1869 Screw Ends
*Fig. 1498 Flange Ends
Renewable Stainless Steel Stem and Disc
Nickel Alloy Seat Rings



Angle
Fig. 1873 Screw Ends
*Fig. 1601 Flange Ends
Renewable Stainless Steel Stem and Disc
Nickel Alloy Seat Ring

*(Basic Rating 300 lb. SP-750° F.)

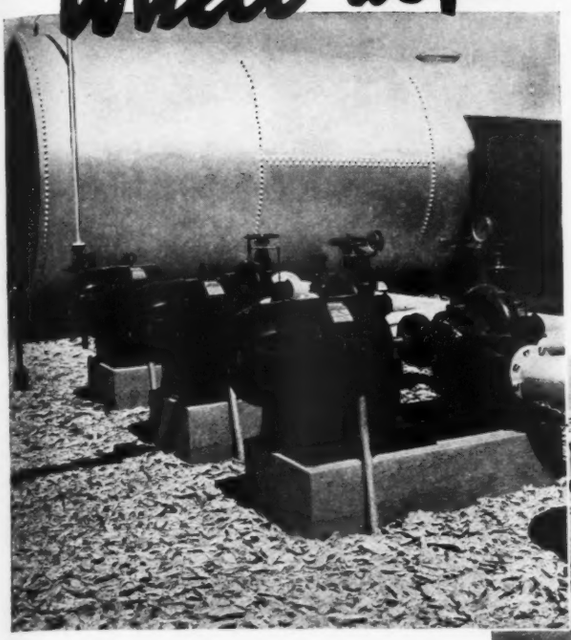
Lunkenheimer Distributors in all oil field centers are prepared to give prompt delivery on 350 lb. SP valves from stock.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO BOSTON
PHILADELPHIA SAN FRANCISCO
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

For detailed information on these new valves ask your distributor for Circular No. 598 or write for a copy direct.

Where dependability counts—

CONTINENTAL CHOOSES GENERAL ELECTRIC DRIVES FOR NEW BASILE PLANT



Three efficient workmen on duty—G-E 30-hp explosion-proof motors driving circulating-water pumps in new Basile plant

Above — *General Electric explosion-proof motors driving lean-oil and reflux pumps in new Continental plant*

Left — *Two G-E turbines drive generators for power supply in addition to supplying process steam for refinery operations*

THEY'RE checked and double checked, tested and retested—these G-E explosion-proof motors—for they're built to give DEPENDABLE SERVICE, such as the Continental Oil Company must have from the motors in its new Basile, Louisiana, gasoline recovery and stabilization plant.

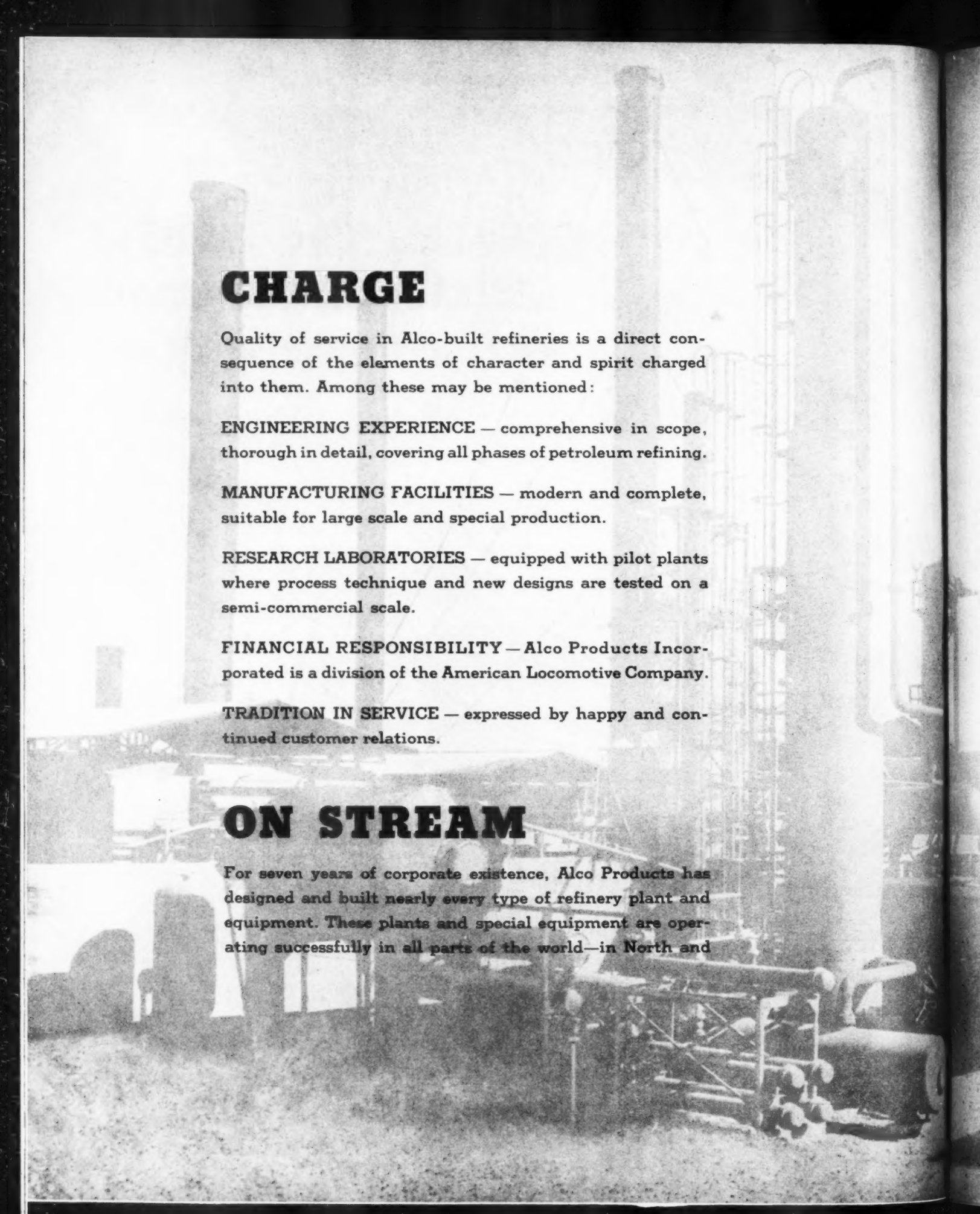
Every test to which a General Electric motor is subjected before being approved for use is designed to assure us that the motor more than meets the strictest requirements. When used with G-E control (all control for this new plant is G-E oil-immersed) it makes a combination which will give long, safe, and uninterrupted service.

In addition to supplying all motors and control, General Electric assisted Continental in making this plant one of the finest, most modern plants in the Louisiana field by furnishing all conduit, wire, cable, and lighting units and equipment.

You, too, can come to General Electric, with full confidence, for all kinds of electric apparatus for stabilization plants. See the oil specialist in the nearest G-E office. General Electric, Schenectady, N. Y.

020-303A

GENERAL ELECTRIC



CHARGE

Quality of service in Alco-built refineries is a direct consequence of the elements of character and spirit charged into them. Among these may be mentioned:

ENGINEERING EXPERIENCE — comprehensive in scope, thorough in detail, covering all phases of petroleum refining.

MANUFACTURING FACILITIES — modern and complete, suitable for large scale and special production.

RESEARCH LABORATORIES — equipped with pilot plants where process technique and new designs are tested on a semi-commercial scale.

FINANCIAL RESPONSIBILITY — Alco Products Incorporated is a division of the American Locomotive Company.

TRADITION IN SERVICE — expressed by happy and continued customer relations.

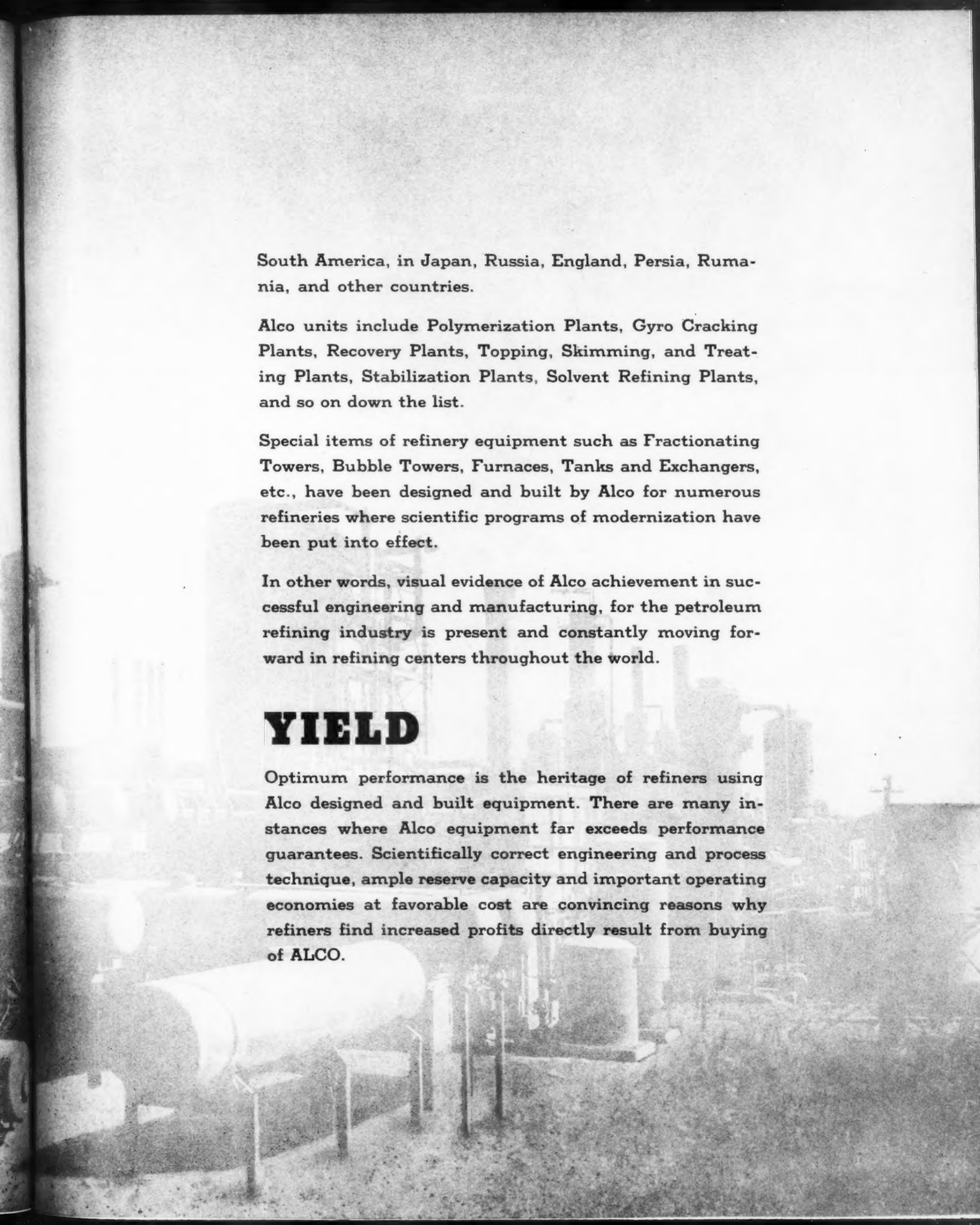
ON STREAM

For seven years of corporate existence, Alco Products has designed and built nearly every type of refinery plant and equipment. These plants and special equipment are operating successfully in all parts of the world—in North and

0 CHURCH STREET
NEW YORK, N. Y.

ALCO PRODUCTS

DIVISION OF AMERICAN



South America, in Japan, Russia, England, Persia, Rumania, and other countries.

Alco units include Polymerization Plants, Gyro Cracking Plants, Recovery Plants, Topping, Skimming, and Treating Plants, Stabilization Plants, Solvent Refining Plants, and so on down the list.

Special items of refinery equipment such as Fractionating Towers, Bubble Towers, Furnaces, Tanks and Exchangers, etc., have been designed and built by Alco for numerous refineries where scientific programs of modernization have been put into effect.

In other words, visual evidence of Alco achievement in successful engineering and manufacturing, for the petroleum refining industry is present and constantly moving forward in refining centers throughout the world.

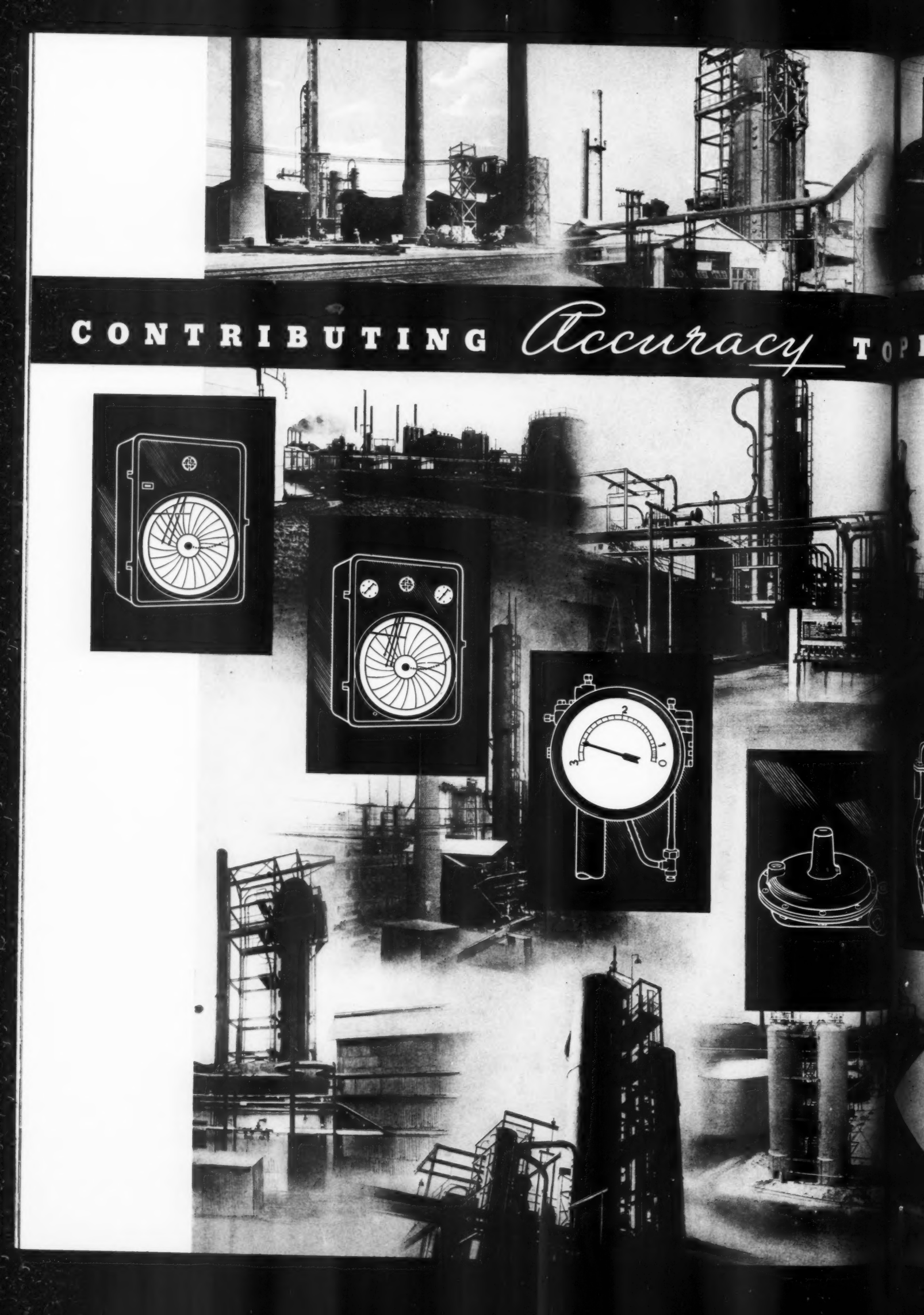
YIELD

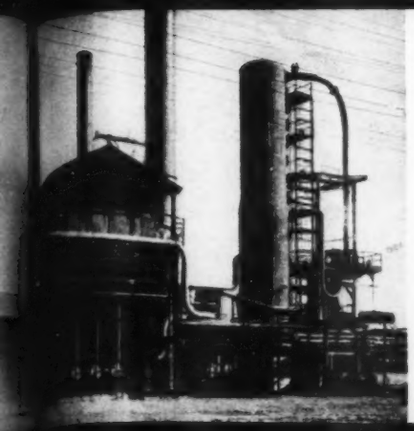
Optimum performance is the heritage of refiners using Alco designed and built equipment. There are many instances where Alco equipment far exceeds performance guarantees. Scientifically correct engineering and process technique, ample reserve capacity and important operating economies at favorable cost are convincing reasons why refiners find increased profits directly result from buying of ALCO.

INCORPORATED

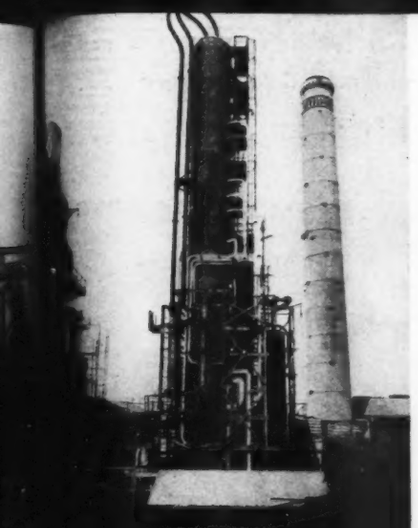
LOCOMOTIVE COMPANY

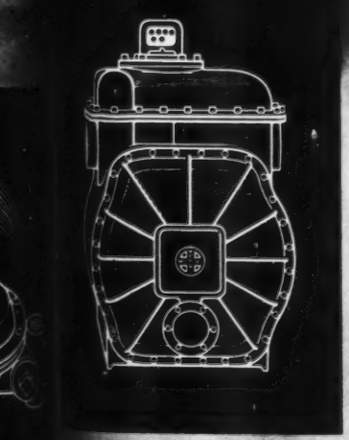
ARTILLERY HOUSE
ARTILLERY ROW
LONDON, S. W. 1, ENGLAN


CONTRIBUTING Accuracy TO



PLANT EFFICIENCY . . . .





MAINTAINED ACCURACY is today a primary consideration in plant operations of the petroleum industry. Visit the important refineries . . . and you will find American Meter world-recognized instruments contributing accurate measurement and positive control of air, gas, steam, oil, liquids.

In Lummus new construction, for example, American Meter Flowmeters are being specified for their dependable, long-sustained accuracy.

Other American Meter safeguards of plant efficiency include gas meters, instruments for rate-volume and liquid level control, gas and air pressure regulators. . . . Applications discussed in new engineering bulletins available on these instruments:

ROUND CASE INDICATING FLOWMETERS utilize the approved orifice method of measurement. The very essential accuracy of orifice plate and differential pressure indicator is built in to stay.

RECORDING AND INTEGRATING FLOWMETERS give progressive, totalized chart readings of the accurately measured flow rates of gas, air or liquids.

RATE-VOLUME CONTROLLERS automatically and accurately maintain the flow of gas or liquid at a predetermined rate. They also are adapted for use as Liquid Level Recorders and Controllers.

REGULATORS of gas and air pressure, have patented exclusive features insuring positive lockup and accurate pressure control.

IRONCASE METERS—standard for accuracy in the measurement of gas at high or low pressures from zero to full capacity — meet an extensive range of requirements. The solid, one-piece body casting prevents internal leaks.

AMERICAN METER CO
MEASUREMENT ENGINEERS
CENTENNIAL
1836-1936

AMERICAN METER COMPANY
INCORPORATED
METRIC METAL WORKS *ERIE, PENNSYLVANIA*

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SCHLUMBERGER COVERS THE WORLD!

U.S.A. OFFICES OF SCHLUMBERGER

Progressive operators the world over have accepted Schlumberger surveys as the one thoroughly reliable method of obtaining essential information on subsurface conditions.

Thousands of Schlumberger surveys, under varying conditions in every important oil producing section of the world, offer conclusive evidence of the accuracy and reliability of Schlumberger electrical logging.

Make Schlumberger surveys a part of your regular drilling routine . . . . and be sure.

SCHLUMBERGER

WELL SURVEYING CORPORATION

HOUSTON, TEXAS U.S.A.

"Electrical Well Logging"

Hundreds of pipelines like this one, totalling in all over 20,000 miles, are back of the service that Linde offers for your profitable utilization of Multi-Flame Lindewelding.

20,000 MILES OF PIPELINE EXPERIENCE

is behind Multi-Flame Lindewelding

Multi-Flame Lindewelding was developed by the Linde organization from actual experience with the welding of more than 20,000 miles of pipe. Starting with the first use of welding on an overland pipeline in 1911, Linde has been continuously and actively engaged in the improvement of pipeline-welding operations. With this background, Lindewelding has, as its first requirement, the production of welds fully as strong and as ductile as the pipe itself.

Multi-Flame Lindewelding is fast and economical even under varied field conditions. It saves 15 to 40 per cent in oxygen, acetylene, and welding rod and often as much as 50 per cent in time required to make welds.

The many benefits of Multi-Flame Lindewelding are further enhanced by Linde Process Service, which focuses on your particular problems the practical experience gained in servicing the needs of more than 100,000 users of Linde products. The vast scope of this service is made possible because Linde has access to the extensive research and engineering staffs of the great organization of which it is a unit. Linde Process Service is not for sale—yet is given gladly to all purchasers of Linde Oxygen. Why not have Linde work with you on your next pipeline project? Address The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, New York and principal cities.

Everything for Oxy-Acetylene Welding and Cutting

LINDE OXYGEN • PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES FROM UCC LINDE UNION CARBIDE

20 LUMMUS

GULF OIL CORPORATION — 5,000 barrels per day Furfural unit, Port Arthur, Texas. The unit is sufficiently flexible to produce high viscosity index specification raffinate products from feed stocks of widely varying characteristics.

GULF OIL CORPORATION — Naphtha rerun unit of unusual flexibility and efficiency . . . processing four different acid treated distillates at the rate of 3,600 barrels per day . . . producing an overhead cut . . . four side streams . . . and bottoms—all meeting special specifications.

SHELL PETROLEUM CORPORATION, Wood River, Illinois — The refiner desired to run 6,300 barrels per day of 25 deg. API gravity Mid-Continent crude, taking overhead 33 volume per cent on the charge. It was further stipulated that the bottoms from the unit should have a 400 deg. F. close cup flash and not over 5% boiling at 400 deg. F. under 10 mm. vacuum. To meet these requirements Lummus supplied a novel vacuum fractionating unit employing shower decks instead of the conventional bubble cap. With this design it was possible to minimize the pressure drop between flash zone and tower top and thus obtain the desired results.

SHELL PETROLEUM CORPORATION, Houston, Texas — The modernization of existing topping equipment and the construction of additions to provide 25,000 barrels per day of crude . . . fully guaranteeing the yields and product quality on three different crudes.

SHELL-MEX. AND B. P., LTD., Thames Haven, Essex, England — A 1,170 barrel per day Benzol Acetone Dewaxing Plant designed to operate on Conception solvent treated distillate.

GEWERKSCHAFT DEUTSCHE ERDOL RAFFINERIE, Hanover, Germany—Now under construction . . . a new lubricating oil refinery combining the most modern unit processes for lubricating oil production—Coubrough Vacuum Distillation, Furfural Solvent Refining, Clay Contacting and Benzol Acetone Dewaxing. Capacity: 1,600 barrels per day, 70% Nienhagen Reduced Crude.

SOCONY-VACUUM OIL CO., INC., Paulsboro, N. J. — The largest benzol acetone plant constructed to date, designed to process six different feed stocks on average thruput of 3,190 barrels per day to produce zero pour test dewaxed oil. By adding filter surface, the capacity of the plant can be increased to 3,690 barrels per day.

SOCONY-VACUUM OIL CO., INC., Olean, N. Y. — A Benzol Acetone Dewaxing plant with a capacity of 1,428 barrels per day of Pennsylvania special wax distillates. With additional filter surface this capacity can be increased to 2,856 barrels per day.

THE PURE OIL COMPANY, Toledo, Ohio — A combination topping and cracking unit in which the various cracking cuts are segregated and separately cracked under optimum conditions. No soakers or reaction chambers are employed. Capacity, 8,000 barrels per day or 5,550 barrels per day of Mt. Pleasant, Michigan crude, the capacity depending upon the products required.

THE PURE OIL COMPANY, Nederland, Texas — Specifications called for a 10,500 barrel per day topping unit to handle three different crudes: East Texas, Van Zandt and Bosco, producing rubber solvent, VM and P Naphtha, Stoddard solvent, kerosene, gas oil and power oil to market specifications . . . a unit of optimum flexibility and fractionating efficiency.

THE PURE OIL COMPANY, Nederland, Texas — A Lummus combination cracking unit with a capacity of 11,100 or 14,000 barrels per day Van Zandt crudes, depending upon the products required. Efficient segregation of charging stocks to separate cracking furnaces assures full advantage of the higher yields obtained.

DEUTSCHE VACUUM OEL A.G., Bremen, Germany — A Benzol Acetone Dewaxing plant incorporating the successful adaptation of the continuous vacuum filter to benzol acetone dewaxing. The plant has a capacity for dewaxing 525 barrels per day of Haenigsen Duosol Raffinate to a zero pour test product.

INSTALLATIONS

EACH ONE TAILORED TO MEET SPECIFIC REFINERY NEEDS

With the expansion of the petroleum industry and the development of new processes, the special requirements of refiners become more and more diversified and exacting. For maximum results each plant must be virtually a tailor-made job—designed to fit processes and conditions.

In the short space of eighteen months Lummus, in addition to other construction, has cooperated with refiners in solving specific problems encountered in the design and construction of the twenty plants summarized on these pages:

RAFFINERIA di NAPOLI, S. A. I., Naples, Italy — Now under construction . . . a 525 barrel per day Benzol Acetone Dewaxing plant designed to operate on a wide range of Duosol refined stocks from Oklahoma City and Coastal crudes.

WHITE STAR REFINERY, Trenton, Michigan — Modification of an existing cracking unit to operate as a combination unit with a capacity of 6,000 barrels per day. The guarantee of 62% yield of 400 end point, 63 octane number gasoline was met successfully with satisfactory length of run.

HERBERT GREEN & COMPANY, LTD., East Halton, England — A complete lubricating plant combining Duosol treating, clay contacting, Benzol Acetone Dewaxing and vacuum lube fractionation. Designed, constructed and operated initially by Lummus. This plant has operated at well over its rated capacity of 1,400 barrels per day, Oklahoma City reduced crude and has produced finished oils of over 100 viscosity index. This benzol acetone dewaxing plant was the first solvent dewaxing plant to be put into operation in Europe.

ASANO BUSSAN CO., LTD., Tokyo, Japan — A 1,000 barrel per day Coubrough unit running Poza Creek Crude to overhead cylinder stock, transformer oil, gas oil, neutrals and 50 Pen. asphalt.

BARBER ASPHALT COMPANY, Maurer, N. J. — A Lummus vacuum pipe still which performs the difficult task of running 6,000 barrels per day of 60% reduced Venezuelian Crude to a 260 deg. F. Ring and Ball melting point (0 penetration) asphalt bottoms.

MAGNOLIA PETROLEUM COMPANY, Beaumont, Texas — Benzol Acetone Dewaxing plant designed to operate on various Oklahoma City or East Texas solvent refined distillates to produce O° F. pour oils. Capacity ranges from 3,060 to 3,415 barrels per day, depending upon the charge stock.

MAGNOLIA PETROLEUM COMPANY, Beaumont, Texas — A large Furfural refining unit capable of handling a wide variety of charging stocks of approximately 3,000 barrels per day to produce raffinates meeting V. I. and color stability specifications after dewaxing.

STANDARD OIL COMPANY OF NEW JERSEY, Campana, Argentina — Atmospheric and vacuum pipe stills . . . designed, constructed and put into initial operation by Lummus, meeting an extremely short delivery date . . . Capacity 6,500 barrels per day, running San Pedro or low cold test Peruvian Crude to produce light and heavy naphtha, refined oil, tractor oil, gas oil, light and heavy lube distillate and bottoms, to rigid specifications.

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PETROLEUM REFINING PLANTS

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FILLS IN...

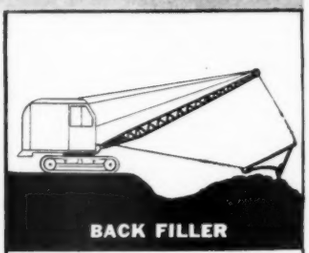
ALL OVER THE MAP!

COSTS LESS TO OWN, TO RUN, TO MAINTAIN

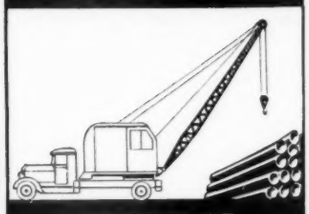
P&H BANTAM WEIGHT

● You'll go a long way to find a machine that'll do as many things around the oil fields and on pipe-line jobs as the P&H Bantam Weight. . . . This machine is built for high operating speeds—low operating costs! How? It's all-welded of alloy steels to make it lighter and stronger—to stand the gaff where men are men and don't want machines that have to be constantly pampered and repaired. The husky Ford V-8 motor delivers power at lower costs than you've ever known in a machine of this type. The Bantam Weight's ready at a moment's notice to go anywhere on 'most any sort of work—digging, backfilling, handling pipe—for any of the six conversions which include shovel, crane, dragline, backfiller, trench hoe, pile driver or skimmer scoop. The attachments of welded alloy steel are so light you can make the change-over right in the field. The Bantam Weight's available on truck or crawler mounting. . . . If you aren't hep to the savings this new low-cost machine is making around the oil fields, write today for full information.

CONVERTIBLE FOR ALL TYPES OF SERVICE

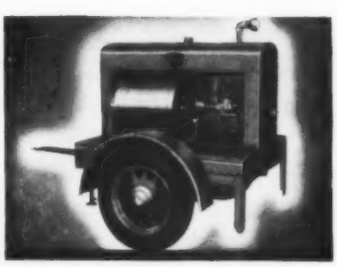


BACK FILLER



TRUCK CRANE

SHOVEL



FOR WELDING ALL ALONG THE LINE "SMOOTHARC" P & H HANSEN TRAILER WELDER

Here's 150 ampere capacity—the most practical capacity for a wide range of work in welding pipe, erecting structural steel, repairing broken machinery, etc. It's driven by a small air-cooled direct-connected gas engine. P&H's exclusive single current control makes it easier to get even penetration for better welds on all classes of work. The two-wheel automotive type trailer with cantilever springs and balloon tires takes it safely anywhere in a hurry. The model 150 is built to order for service in the oil fields. Bulletin No. W-6 describes it. Send for a copy.

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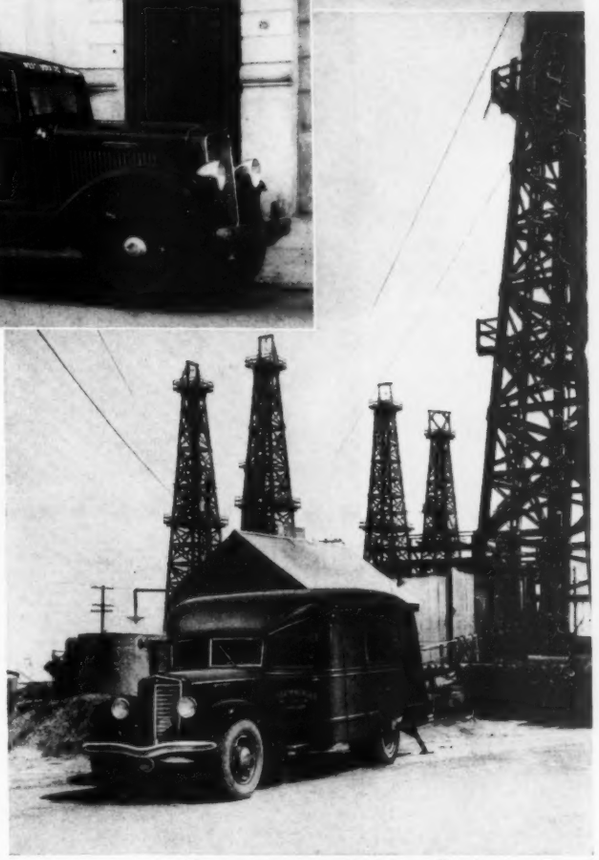
INTERNATIONAL

in Name and Reputation

Above: In South America, the West India Oil Company uses this International Truck for the distribution of gasoline and oil to its agents in Bahia Blanca, Argentina. *At Right:* This is one of 6 International Trucks owned by the Schlumberger Well Surveying Corporation, California division, with headquarters in Long Beach.



MANY YEARS of Truck, Tractor, and Engine manufacture and the steadfast determination of International Harvester have made a lasting imprint on hauling and industrial power history. In the great fields of transportation and power, the name "International" means *products of quality and standing* and they are recognized as such *internationally!*

Go where you will, the world over, the reputation of these trucks, tractors, and engines will have preceded you. Throughout the industry, everywhere, you will find Internationals and a deep respect for their performance.

International Trucks, Tractors, and Power Units and the Service and long experience of International Harvester are in easy reach of users. Consult any International Company-owned branch, or dealer, as to types, sizes, specifications, etc.

The International Truck line ranges in size from the Half-Ton unit to powerful Six-Wheelers. International Tractors are available in wheel and crawler types, including Diesel. International Power Units range from 12 to 100 h.p., and include 4 and 6-cylinder engines for gasoline, kerosene, Diesel, natural gas, and distillate operation.

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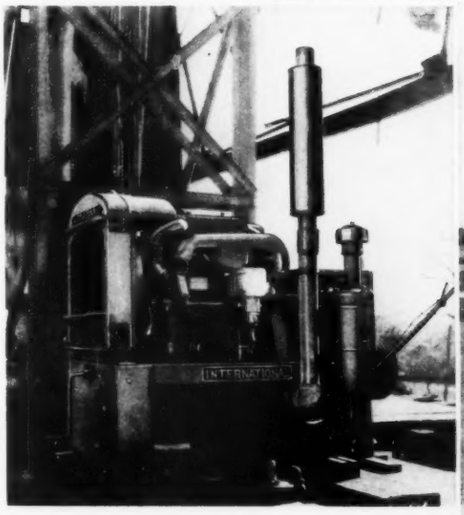
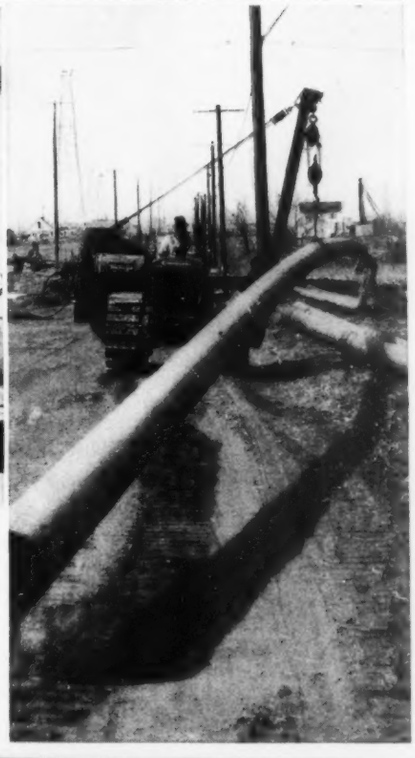
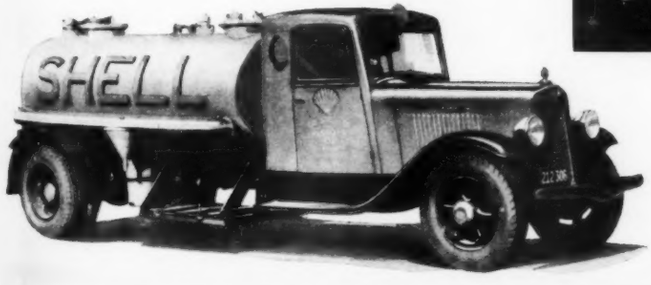




Above: An International Model 300 Power Unit working for the Nemaha Oil Company in the Oklahoma City field.

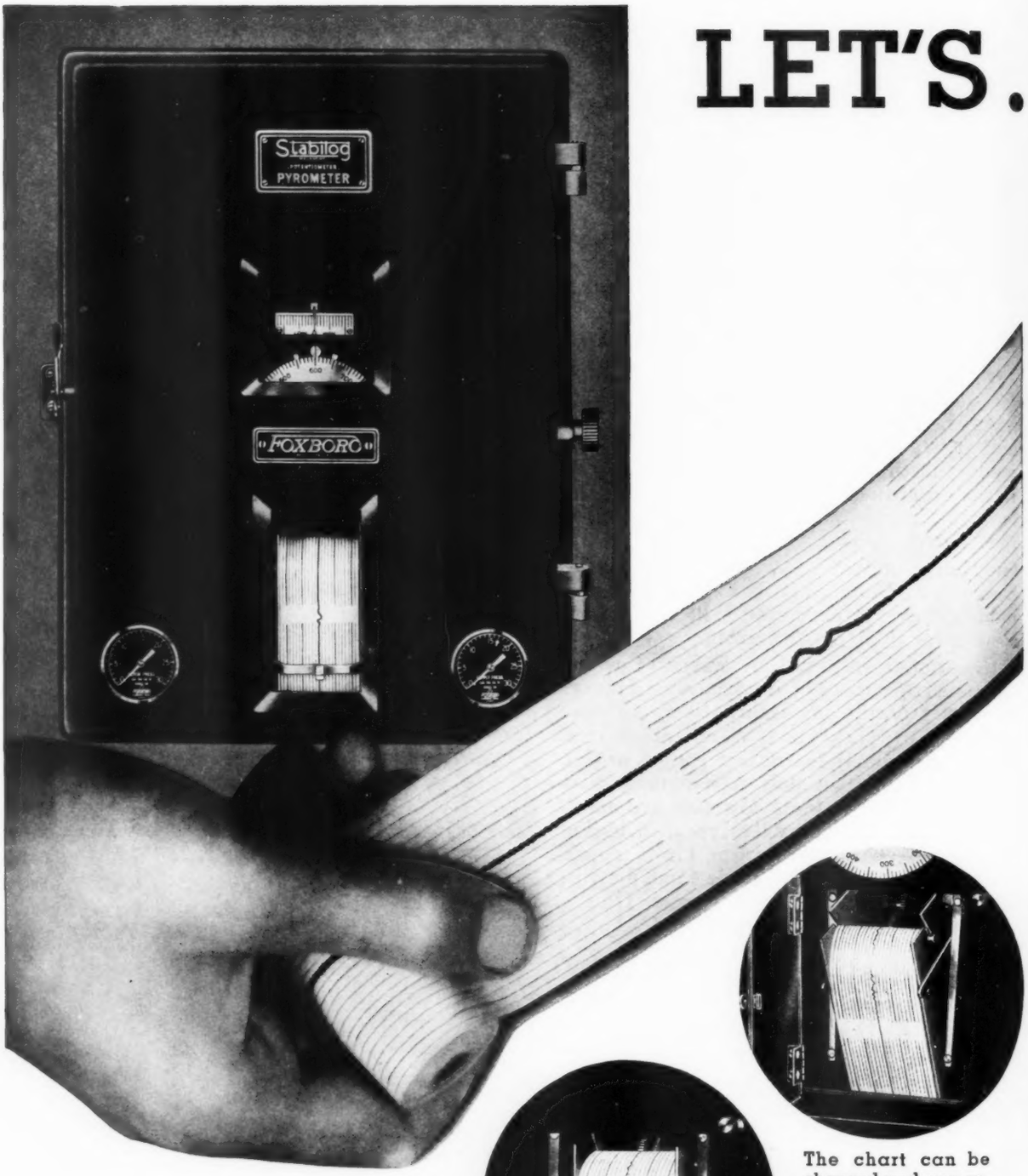
At Right: An International TA-40 TracTracTor, with rigid frame, on a pipelaying project in Oklahoma.

Below: The Shell Co. of Australia, Ltd., uses this International Truck for deliveries in Melbourne.

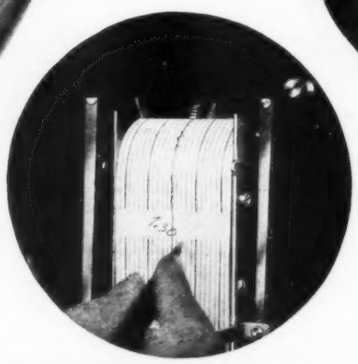


INTERNATIONAL HARVESTER

LET'S.



A writing platen under the chart gives a firm support for jotting down notes.



The chart can be changed and pen refilled without stopping the instrument or interrupting the control.

..LOOK AT THE RECORD

FOR SENSITIVE, ACCURATE TEMPERATURE CONTROL

Process conditions thrown out of balance! Instantly, the Stabilog Potentiometer Controller responds. The two-inch chart carries irrefutable evidence of this fact. Note that the temperature deviation was held to a minimum and quickly returned to the control setting. That's a sign of sensitive, automatic control – always assured by Foxboro.

The Stabilog Potentiometer gives close control plus a record of the relative effect and time of the deviation from control setting. It is a control recorder which records control results – and does so at a low cost.

If you are interested in "close control" (negligible deviation from predetermined temperature) get the facts about the Stabilog Potentiometer Controller. Ask for Bulletin 194-1 – we will gladly send you a copy.

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ACCURACY *RESPONSE*

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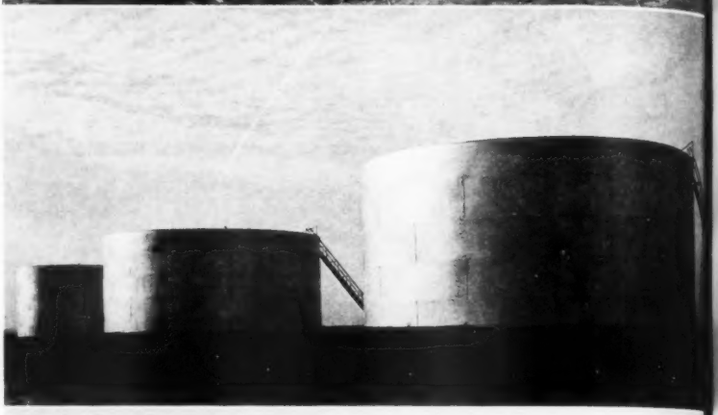

Our Experience is Broad

Since 1893 our company has specialized in the fabrication and erection of steel tanks and platework. We have built thousands of tanks to hold oil, gasoline, water, acids and other liquids. We have built pressure vessels of all types. We have built large field erected tanks—and small shop assembled tanks. We have pioneered in welding—and follow the latest and best procedure. A number of our installations are illustrated herewith.

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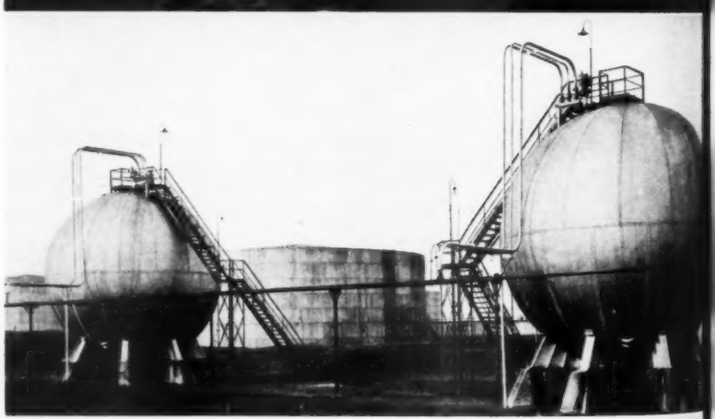
Our sales representatives are technical men who can intelligently discuss proposed work with you.

The design of all structures, that we are intrusted to build, is checked by our engineering department before fabrication is started. This is an inflexible rule, with us, whether the original plan was made by ourselves or others.



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We have modern, well equipped shops at Pittsburgh and Des Moines. A spirit of friendly rivalry exists between the two—which promotes efficiency and accuracy.

This applies to our erection departments as well. The Western group is supervised from Des Moines, the Eastern from Pittsburgh. Our erectors are competent, resourceful men, who will handle their jobs efficiently and conduct themselves properly while on your premises.

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